UNIVERSITY
OF MICHIGAN
FEB 02 1953
HOSPITAL
LIBRARY

Journal of THE AMERICAN DIETETIC ASSOCIATION

VOL. 29, NO. 1

January 1953

PROFESSIONAL LEADERSHIP
E. Neige Todhunter

HOW WE DO IT IN ENGLAND
Edith Walker

TOMORROW'S EQUIPMENT
Clarice D. Gullickson

FLUORINE IN HUMAN NUTRITION
H. H. Mitchell and Marjorie Edman

FOOD INTAKES OF OBESE AND NON-OBESE WOMEN
Rachel Beaudoin and J. Mayer

PHYSIOLOGIC RESPONSE TO DIFFERENT TYPES OF BREAKFASTS BY OLDER MEN
W. W. Tuttle et al.

THIAMINE METABOLISM OF WOMEN
Elizabeth Cox Johnson et al.

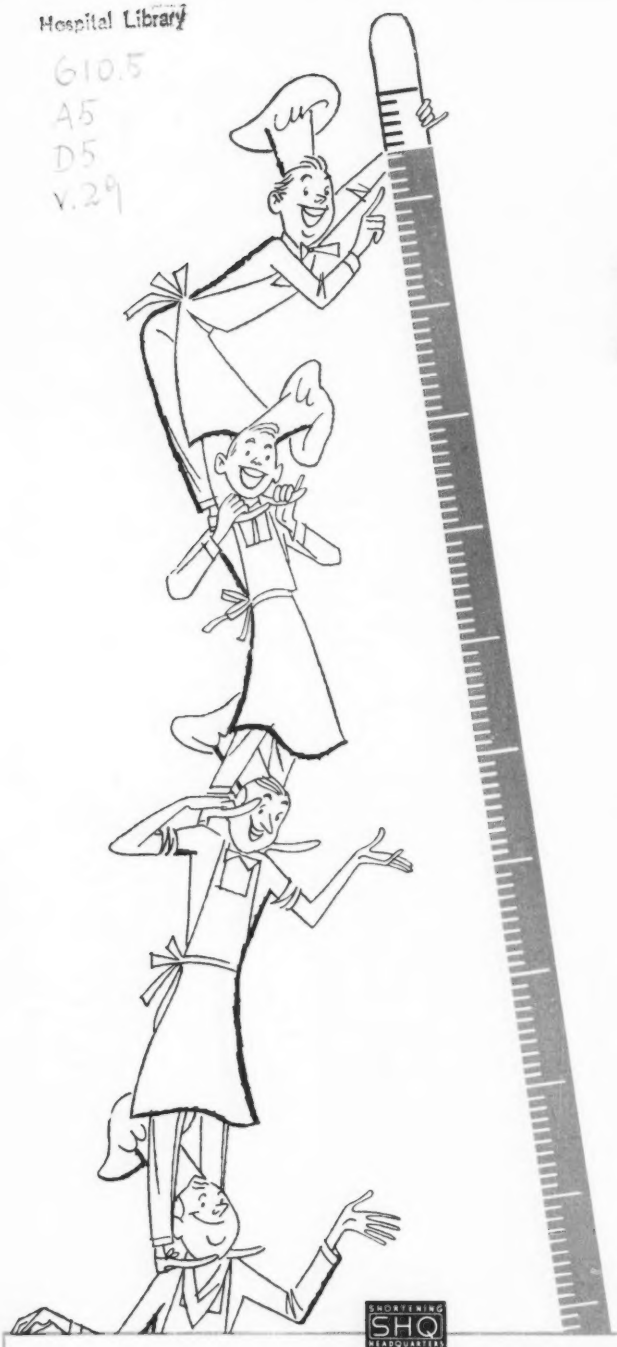
Advisory Defense Committee for Women in the Armed Services

Civil Defense Work of District of Columbia Dietetic Association

36th A.D.A.
Annual Meeting,
Los Angeles
August 25-28, 1953

PUBLISHED BY *The American Dietetic Association*

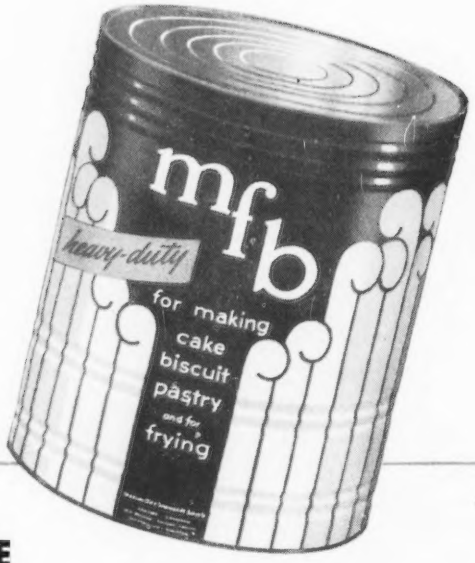
Hospital Library
G10.5
A5
D5
v.29



heavy-duty

mfb

the shortening with the high smoke point

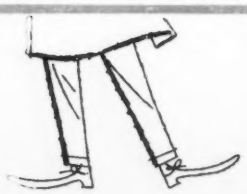


SHORTENING HEADQUARTERS SHQ

AN ALL-VEGETABLE PRODUCT OF

THE WESSON OIL PEOPLE

New York • Chicago • Savannah • New Orleans • San Francisco • Memphis • Houston



Hosp.
St.
Visitors
Room

VOLUME 29
NUMBER 1

Journal OF THE American Dietetic Association

CONTENTS, JANUARY 1953

PROFESSIONAL LEADERSHIP—*E. Neige Todhunter*, Ph.D. 13

HOW WE ARE DOING IT IN ENGLAND—*Edith Walker*, O.B.E. 17

TODAY'S WORD ON TOMORROW'S EQUIPMENT—*Clarice D. Gullickson* 20

FLUORINE IN HUMAN NUTRITION—*H. H. Mitchell*, Ph.D., *and Marjorie Edman* 24

FOOD INTAKES OF OBESE AND NON-OBESE WOMEN—*Rachel Beaudoin*, Sc.D., *and J. Mayer*, Ph.D., D.Sc. 29

PHYSIOLOGIC RESPONSE TO SIZE AND CONTENT OF BREAKFAST BY MEN OVER 60—*W. W. Tuttle*, Ph.D., *Kate Daum*, Ph.D., *Hilda Roberts, and Barbara Randall*, Ph.D. 34

THIAMINE METABOLISM OF WOMEN ON CONTROLLED DIETS. IV. Comparison of the Daily Levels of Thiamine in the Blood and Urine—*Elizabeth Cox Johnson, Rachel B. Dubé, Hellin A. Louhi, Hsi-Hsuan, Yü, Valerie C. Wilmot, and Clara A. Storvick*, Ph.D. 41

CURRENT COMMENT

Report on Advisory Defense Committee for Women in the Armed Services—*Mary I. Barber* 44

District of Columbia Dietetic Association Tackles Civil Defense—*Dorothy L. Bovee* 45

BOOK REVIEWS 47

ADDITIVE 50

CURRENT LITERATURE 54

NEWS NOTES 74

The Journal of the American Dietetic Association is published monthly by The American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., and 620 N. Michigan Ave., Chicago 11, Ill. Neither the Association nor the Editor assumes responsibility for the opinions expressed by authors of papers abstracted, quoted, or published in full in this Journal

Subscriptions: Rate $6 per year in advance in the U. S., Canada, and countries of the Postal Union; all other countries, $7 per year in advance. Special rate to undergraduate students and dietetic interns in approved internships, $2.00 per year in advance, if order is approved by head of the department. Single copies, 75 cents in advance. All correspondence concerning Journal subscriptions, orders for copies or reprints from the Journal, and notices of change of address should be sent to The American Dietetic Association, Mt. Royal & Guilford Aves., Baltimore 2, Md., or preferably 620 N. Michigan Ave., Chicago 11, Ill. Notices regarding change of address should reach the publisher by the *23rd of the month before the date of issue* on which the change is to take effect and both old and new addresses must be given. Claims for Journals lost in the mail will not be entertained more than six months after the date of the issue involved.

Editorial Correspondence: All articles and notices for publication, general correspondence, and inquiries should be sent to the Editor at The American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill. Manuscripts are accepted for publication on condition that they are contributed solely to the Journal. Copy must be double-spaced and two copies, an original and one carbon, submitted.

Advertising: All correspondence concerning advertising should be addressed to The American Dietetic Association, 620 N. Michigan Ave., Chicago 11, Ill.

COPYRIGHT, 1953, BY THE AMERICAN DIETETIC ASSOCIATION Printed in U.S.A.

Entered as second-class matter June 30, 1925 at the Post Office at Baltimore, Md. under the act of August 24, 1912

Published monthly by The American Dietetic Association

OFFICERS, 1952-1953 THE AMERICAN DIETETIC ASSOCIATION

Headquarters of the Association: 620 N. Michigan Ave., Chicago 11

Coordinating Cabinet

EXECUTIVE BOARD

President, BEULAH A. HUNZICKER, The Presbyterian Hospital, Chicago
President-Elect, GRACE BULMAN, Veterans Administration, Washington, D. C.
Speaker of the House of Delegates, LUCILLE M. REFSHAUGE, Hartford (Conn.) Hospital
Secretary and Chairman, Membership Committee, ESTHER A. ATKINSON, The Pennsylvania State College, State College
Treasurer and Chairman, Finance Committee, LEVELLE WOOD, The Ohio State University, Columbus

SECTION CHAIRMAN

Community Nutrition, GERALDINE M. PIPER, U. S. Public Health Service, Div. of Chronic Disease and Tuberculosis, Washington, D. C.
Diet Therapy, MRS. CORINNE H. ROBINSON, Temple University Hospital, Philadelphia
Food Administration, MRS. CORA E. KUSNER, Colorado State Hospital, Pueblo
Professional Education, HENDERIKA J. RYNBERGEN, Cornell University, New York Hospital School of Nursing, New York City.

COUNCIL OF THE HOUSE OF DELEGATES

Speaker, LUCILLE M. REFSHAUGE, Hartford (Conn.) Hospital
Speaker-Elect, E. NEIGE TODHUNTER, University of Alabama, University
Delegates of the House of Delegates
Secretary, LIDA A. JAMISON, Chicago Dietetic Supply House, Inc., Chicago 1953
MRS. MARGARET C. BERNARD, 379 Cook St., Denver 6 1953
LOUISE ESCH, Stanford University Hospitals, San Francisco. 1954
ANNA DEPLANTER BOWES, Pennsylvania Dept. of Health, Harrisburg 1954
Senior Delegates-at-Large
HELEN E. WALSH, California Dept. of Health, San Francisco 1953
A. JUNE BRICKER, Metropolitan Life Insurance Co., New York City 1953

DELEGATES-AT-LARGE

MRS. BESSIE BROOKS WEST, Kansas State College, Manhattan 1954
ELIZABETH PERRY, City Hospital, Cleveland 1954
LILLIAN S. COOVER, Ph.D., 2121 Hughes Ave., Ames, Iowa.. 1955
FERN W. GLEISER, School of Business, University of Chicago 1955

Headquarters Staff

RUTH M. YAKEL, Executive Secretary
DOROTHY J. BATES, Assistant to Educational Director
MILDRED L. EGEBERG, Advertising and Exhibition Director
MRS. DOROTHY WEBER INYARD, Placement Bureau Director
MABLE MACLACHLAN, Educational Director
MRS. THELMA POLLEN, Public Relations Director
J. HART ROSDAIL, Business Manager
HARRIET E. SANKEY, Managing Editor, JOURNAL
MRS. DOROTHEA F. TURNER, Editor, JOURNAL
CLARA ZEMPEL, Professional Activities Director

ADVISORY BOARD

L. A. MAYNARD, Ph.D., D.Sc., Cornell University, Ithaca, N. Y. 1953
ANTHONY ROURKE, M.D., Hospital Council of Greater New York, New York City 1954
CHARLES GLEN KING, Ph.D., Nutrition Foundation, Inc., New York City 1955

AWARDS, SCHOLARSHIP AND LOAN FUND BOARD

ABBY L. MARLATT, Ph.D., Kansas State College, Manhattan

DIETETIC INTERNSHIP BOARD

HENDERIKA J. RYNBERGEN, Cornell University, New York Hospital School of Nursing, New York City 1953

JOURNAL BOARD

CHARLOTTE M. YOUNG, Ph.D., Cornell University, Ithaca, N. Y. 1953
MRS. WINTRESS DALBEY MURRAY, Eastman Kodak Co., Rochester, N. Y. 1953
BERDENA ROSENOW, University of Kansas Medical Center, Kansas City, Kans. 1953
CALLIE M. COONS, Ph.D., Bureau of Human Nutrition and Home Economics, U. S. Department of Agriculture, Washington, D. C. 1954
ADELIA BEEUWKES, University of Michigan, Ann Arbor.... 1954
MRS. KATHERINE M. JOHNSON, P.O. Box 697, Vancouver, Wash. 1954
MILDRED BONNELL, University of Washington, Seattle..... 1955
MRS. BESSIE BROOKS WEST, Kansas State College, Manhattan 1955
MARTHA F. TRULSON, D.Sc., Harvard School of Public Health, Boston 1955

PLACEMENT BUREAU BOARD

ALTA B. ATKINSON, Teachers College, Columbia University, New York City 1953
JEANNE REID, Charity Hospital of Louisiana, New Orleans. 1953
UNA ROBINSON, Ph.D., Indiana University, Bloomington.. 1953
MRS. VERNA A. MCKINLEY, 16 River Dr., Appleton, Wis.... 1954
MYRTLE VAN HORNE, Michigan Dept. of Health, Lansing... 1954
MRS. HELEN H. ANDERSON, Stanford University Hospitals, San Francisco 1954
EVELYN A. CARPENTER, Hospital for Contagious Diseases, Philadelphia 1955
ELIZABETH P. SEARS, 6 Siranoy Rd., W. Hartford, Conn..... 1955
HELEN L. TWEEDALE, 15843 Meyer Rd., Detroit..... 1955

INVESTIGATION BOARD

THELMA PORTER, Ph.D., The University of Chicago..... 1953
NELL MORRIS, 3522 Rankin St., Dallas, Tex..... 1954
LOUISE ESCH, Stanford University Hospitals, San Francisco. 1955

COMMITTEE CHAIRMEN

Annual Meeting, ELIZABETH A. STARR, Harbor Hospital, Torrance, Calif.
Civil Defense, LILLIAN S. COOVER, Ph.D., 2121 Hughes Ave., Ames, Iowa.
Constitution, ELIZABETH H. TUFT, Wesley Memorial Hospital, Chicago
Educational Exhibits, RITA CAMPBELL, National Live Stock and Meat Board, Chicago
History of A.D.A., MRS. ANNA BOLLER BEACH, National Live Stock and Meat Board, Chicago
History of Nutrition and Dietetics, E. NEIGE TODHUNTER, Ph.D., University of Alabama, University
Legislative Information, RUTH SPENCER, Veterans Administration, Washington, D. C.
Library, ELIZABETH H. TUFT, Wesley Memorial Hospital, Chicago
Nominating, WILMA F. ROBINSON, Illinois Dept. of Public Health, Springfield
Program Planning, HELEN E. WALSH, California Dept. of Health, San Francisco
Public Relations, A. JUNE BRICKER, Metropolitan Life Insurance Co., New York City
Vocational Guidance, ETHEL SUMMEROUR, Mississippi State College for Women, Columbus

PRESIDENTS OF STATE DIETETIC ASSOCIATIONS AFFILIATED WITH THE AMERICAN DIETETIC ASSOCIATION

ALABAMA: Elma Benton, VA Hospital, Montgomery
ARIZONA: Jean Stewart, University of Arizona, Tucson
ARKANSAS: Mrs. Olive H. Bost, 4308 Maryland Ave., Little Rock
CALIFORNIA: Louise K. Christensen, 801 Hilgard Ave., Los Angeles 24
COLORADO: Elizabeth Dyar, Ph.D., A. & M. College, Ft. Collins
CONNECTICUT: Norma I. Charest, Hartford Hospital, Hartford
DELAWARE: Mary E. Lewis, The Delaware Hospital, Inc., Wilmington
DISTRICT OF COLUMBIA: Dorothy L. Bovee, D. C. Chapter, American Red Cross, Washington 6
FLORIDA: Helen D. Cate, Ph.D., Florida State University, Tallahassee
GEORGIA: Mrs. Frances B. Koeth, American Red Cross, Atlanta
IDAHO: Mrs. Helen Walter, St. Luke's Hospital, Boise
ILLINOIS: Marietta Eichelberger, Ph D., Evaporated Milk Assn., Chicago 1
INDIANA: Mrs. Rose A. Bagnoli, 1481 W. 10th St., Indianapolis 7
IOWA: Mildred L. Torrence, Mercy Hospital, Des Moines
KANSAS: Mary A. Streator, Santa Fe Hospital, Topeka
KENTUCKY: Mrs. Margaret L. Hall, City Hospital, Bowling Green
LOUISIANA: Cleo Willey, Louisiana State University, Baton Rouge
MAINE: Wanda J. Zendzian, VA Hospital, Togus
MARYLAND: Anne R. Matthews, Maryland Dept. of Health, Baltimore
MASSACHUSETTS: Effie M. Winger, New England Deaconess Hospital, Boston
MICHIGAN: Marqueta C. Huyck, Wayne University, Detroit
MINNESOTA: Jane M. Leichsenring, Ph.D., University of Minnesota, St. Paul 1
MISSISSIPPI: Mrs. Helen A. Davis, King's Daughters Hospital, Greenville
MISSOURI: Conie C. Foote, Marketing Extension Service, Kansas City
MONTANA: Mrs. Edith A. Swearingen, Montana State University, Missoula
NEBRASKA: Marion Keller, Mutual Benefit Health & Accident Assn., Omaha
NEVADA: Myrl Nygren, St. Marys Hospital, Reno
NEW HAMPSHIRE: Dorothea Bartlett, Mary Hitchcock Mem. Hospital, Hanover
NEW JERSEY: Mary Griffin, Board of Education, Newark
NEW MEXICO: Mrs. Eleanor D. Miller, 4012 Mackland Dr., Albuquerque
NEW YORK: Mrs. Wintress D. Murray, Eastman Kodak Co., Rochester 4
NORTH CAROLINA: Mary A. Anderson, N. C. Mem. Hospital, Chapel Hill
NORTH DAKOTA: Mrs. Dorothy Ayers Loudon, Box 168, Dickinson
OHIO: Virginia Harger, The Ohio State University, Columbus 10
OKLAHOMA: Mrs. Mary C. Zahasky, The University of Oklahoma Hospitals, Oklahoma City
OREGON: Mrs. Georgia B. Peavy, Oregon State College, Corvallis
PENNSYLVANIA: Ruth Reuning, Shadyside Hospital, Pittsburgh
RHODE ISLAND: Mary K. Behlen, VA Hospital, Providence 8
SOUTH CAROLINA: Julia P. Brunson, State Board of Health, Columbia 19
SOUTH DAKOTA: Sister M. Dorothy, St. John's McNamara Hospital, Rapid City
TENNESSEE: Edith M. Graham, Kennedy VA Hospital, Memphis 15
TEXAS: Jessie Whitacre, Ph.D., A. & M. College, College Station
UTAH: Lenora Argyle, 104 S. 9th E., Salt Lake City
VERMONT: Kathleen Van Cleft, Dept. of Health Annex, South Burlington
VIRGINIA: Erna M. Behrend, Medical College of Virginia, Richmond
WASHINGTON: June E. Pettibone, The Mason Clinic, Seattle
WEST VIRGINIA: Cleo M. Gray, 622 S. Terrace, Huntington
WISCONSIN: Mrs. Ruth F. Balliette, Wisconsin Gen. Hospital, Madison 6
HAWAII: Ruth J. Toreson, Queen's Hospital, Honolulu

Professional Leadership

E. NEIGE TODHUNTER, Ph.D.

Head, Department of Foods and Nutrition, University of Alabama, Tuscaloosa

THIS is a getting together[1] to consider our profession, what we stand for, and how well we as individuals measure up. The medical profession has done this on many occasions; the leaders in medicine have held discussions and written about their educational standards, types of training, and professional ethics, and these have been preserved in the fine and inspiring essays of Drake, Osler, Cushing, and others. We in dietetics have not yet produced any such writings to inspire and guide us, and until some dietitian does so, we must borrow and learn from medicine. Our profession is closely allied to that of medicine, and many of its problems in establishing professional leadership and standards of training are similar to ours. I wish that Osler's *A Way of Life* (1) could be required reading for dietitians and dietetic interns as it has so long been for medical students.

DIETETICS AS A PROFESSION

Dietetics is a new profession, so new that many are not willing to accept it as such, and you are sometimes discouraged because you feel that you do not get the recognition that dietetics merits.

The professions which first received recognition were law and theology, followed by medicine—and these are all centuries old. They did not arrive immediately. They, like the other professions of today, grew. Let me remind you of the long struggle for professional status by the surgeons, dentists, and nurses. It was the end of the eighteenth century before surgeons became "respectable." In fact, the colored pole still seen outside some barbers' shops is a reminder of the days when barbers were surgeons. Dentistry was for many years in the hands of travelling tooth pullers. And when Florence Nightingale wished to enter a hospital for nurse's training, her family was bitterly opposed to it; no *decent* person would accept a position as a nurse. How different it is today regarding these professions!

And so it is with dietetics; it has come into its own once again. I say *again*, because dietetics was one of the basic principles of the teaching of Hippocrates, but it was lost in the Dark Ages. Florence Nightingale took the first steps toward restoring dietetics to its rightful place as part of medical treatment when she fed the sick and wounded soldiers in the hospitals of Scutari and the Crimea. But we had to await the developments of modern science for the full recognition of the importance of diet. Beginning in 1897 with the work of Eijkman in the East Indies, Hopkins, Funk, McCollum, Osborne and Mendel, Goldberger, and McCarrison showed, through their work on deficiency diseases, the importance of a knowledge of food values and the value of diet in the treatment of disease. Rapid developments in the science of nutrition brought us to the point where, in 1917, a group of alert women imbued with the spirit of service to humanity, grounded in the knowledge of dietetics, and endowed with vision, founded The American Dietetic Association and gave notice to the world that a new profession was formally established. I suggest that you read again that fine essay by one of our visionary leaders, Mary Huddleson, "A New Profession Is Born" (2).

It was just thirty-five years ago that our profession was established—not long for any profession to achieve full recognition, for no profession springs into full fruit. It takes time from the first planting of the seed; much watering and nourishing and slow growth are needed before there comes the flower and then the fruit. For most professions this has taken place through the centuries, as I have already indicated.

WHAT MAKES A PROFESSION?

Let us look more closely at what makes a profession. Among other characteristics a profession has these three attributes: (a) special knowledge; (b) technical skill; and (c) integrity and allegiance to established ethics.

Special knowledge. Yes, ours is the specialized knowledge of the science of nutrition based on laboratory and clinical experiments and with all the related and supporting fields of knowledge: food preparation, organization and management, sociology, psychology, and economics. It is knowledge gained

[1] Presented at the 35th Annual Meeting of The American Dietetic Association in Minneapolis, on October 22, 1952.

in a specialized, four-year university curriculum and a year of postgraduate work in an approved internship in a hospital, food clinic, or food service center.

Technical skill. Ours is no theoretical training. Laboratory experience goes hand in hand with theory, and the internship is essentially a period of developing technical skills, of practicing the art and science of dietetics.

Code of ethics. The code of ethics to which we all owe our allegiance is one of which any group might well be proud. It clearly defines our responsibilities to our profession, our Association, related professional groups, and the community, and sets standards of personal professional conduct. I wish that I saw our Code of Ethics more often in dietitians' offices, and that it could be placed in the hands of every dietetic intern on the completion of her course.

In dietetics we have no patron saint or legendary god, as Aesculapius—or founding father, as Hippocrates in medicine—or a single name to revere, as the nursing profession has Florence Nightingale. Perhaps that is well; it means that there is no person who can be referred to as the shining light or mentor of our profession. Our profession rests on each of us as individual dietitians; we are the ones by whom our profession is judged. The public looks at us and then forms their opinions of dietitians. We have no "founding father" to look to, but we do have a Code of Ethics and a seal to serve as guides and inspiration.

We should be ever grateful to those early members of our Association who designed our official seal. We should be alert to see that every one of our colleagues is familar with what is on the seal; with our Latin motto which means "To benefit as many as possible"; and with the symbols in the design which represent accuracy, food preparation, life and growth, the abundant diet, and the relation of dietetics to the healing art of medicine.

FACTORS THAT LEAD TO PROFESSIONAL LEADERSHIP

We have the body of knowledge, technical skills, and Code of Ethics that are the bases of any profession as I have just indicated, but it is the members who make a profession respected—or otherwise. Our Association looks to us for leadership. Let us take a few minutes to review some of the factors that lead to professional leadership.

Integrity. We must have integrity. This is particularly important today when integrity has seemed lacking in our national life, when every man is said to have his price, and when favors done for anyone have been expected to bear their reward in money, kickbacks, refrigerators, or mink coats. The dietitian must be someone who cannot be bought, whose integrity is above question. She purchases foods and equipment on the basis of quality, nutritive value, and performance and not as favors or in return for gifts. When a dietitian speaks, anyone can count on

Principles of Professional Ethics for Members of The American Dietetic Association

RESPONSIBILITY TO THE PROFESSION

The dietetic profession is primarily concerned with the improvement and maintenance of national health. The first obligation of each member of The American Dietetic Association is to render service of the highest quality for the common good, regardless of personal gain or monetary reward.

RESPONSIBILITY TO THE ASSOCIATION

The American Dietetic Association is primarily interested in maintaining the highest ethical standards within the profession. The Association lends support and background to its members; it therefore deserves enthusiastic support and each member should contribute generously in every way for its benefit.

RESPONSIBILITY TO RELATED PROFESSIONAL GROUPS

The study and understanding of the aims and ideals of all related professional groups will enable the dietitian and nutritionist to attain harmonious relations with them, thus contributing to better cooperation and greater efficiency in the practice of the profession.

RESPONSIBILITY TO THE ORGANIZATION WITH WHICH SHE IS AFFILIATED

The dietitian and nutritionist should offer wholehearted cooperation to all associates in order to fulfill the objective of the organization with which she is affiliated.

RESPONSIBILITY TO THE COMMUNITY

The dietitian and nutritionist should be interested in the welfare of the community and should participate in activities in which her knowledge will be of special value.

STANDARDS OF PERSONAL PROFESSIONAL CONDUCT

The approach to the public through the various media of education and publicity should be guarded zealously to insure the preservation of the high standards and best interests of the profession.

The personal conduct of each member is the criterion for judging the value of the individual, her colleagues, and her Association. Professional skill, honesty, good judgment, poise, and human sympathy are the necessary qualities for a worthy and successful member of The American Dietetic Association.

what she says. Her integrity is such that she is not afraid to speak out professionally when there is need, as for instance against the sale of soft drinks and candy in schools.

Vision. The professional leader has vision; she is not afraid to fix her eyes on the stars (and yet keep her feet firmly on the ground); she is not afraid to have ideals, even though that is considered quite old-fashioned in our materialistic world of today. We need to have more visionary women like that small group in 1917 who had the courage to follow their dream and launch a new association, dreaming of ever higher standards of academic training and internship. We need to develop the mountain-top habit and climb above the daily problems and work routine, view the whole landscape, and chart our course with vision and understanding.

Work. Osler once gave a wonderful address on "The Master-Word in Medicine" (3). The master word was "work"—and it is just as much a master word in dietetics. Perhaps there are some of you who think you already are far too well acquainted with work. There are two kinds of work a dietitian may do. The first kind produces a paycheck. It gives the dietitian the opportunity to complain about how much she does, how tired she is, how underpaid she is, and what an overworked profession dietetics is. Of course, we suspect that such a person has failed to delegate duties and organize her department. However, while no profession should ignore the basic needs of life and adequate pay, it nevertheless is one of the differences between professions and trades that the profession sees more than the paycheck; it sees obligations of service to humanity.

The second kind of work is the one of which Osler speaks: he calls it "the secret of life," "true balm of hurt minds," and says that "to the youth it brings hope, to the middle aged confidence, to the aged repose . . . it has been the touchstone of progress and the measure of success in everyday life." It is this master word that we need to have close to us for professional leadership. We need to interpret it to the young dietitians and to the students who are wondering about entering our profession, if we are to show them that the dietitian's work brings rewards not easily obtainable elsewhere, that it puts her on the team of physician, nurse, and dietitian—a team where all three have an essential contribution to make to the welfare of humanity.

Our profession has much to offer because of the nature of its work, and if we are to come anywhere near supplying the demand for dietitians, we must interpret dietetics to young people. Recent surveys of what the youth of America wants today have shown that a good secure job stands at the top of the list. Dietetics certainly offers security, though that is not the reason we would want young people to choose it. Rather, we want them to select our profession because they feel a call to the work, that their talents lie in that direction. Mary Putnam Jacobi, who was one of the early graduates of Women's Medical College in Philadelphia and the first woman to gain admission to the School of Medicine in Paris (and in 1870 she won the Paris faculty medal for her thesis on acid and neutral fats) was once asked what she wanted from life. "Everything that the experience of thousands of years shows it has in store for us," was her reply.

Continued study and learning. One occasionally hears the complaint that the young dietitian does not know everything she needs to know by the end of her internship. No, she does not—and she never will, because professional growth is a continuing process. In the field of dietetics we will never know all the answers because there are continuously new discoveries in the nutrition laboratories. There are also those other kinds of knowledge that come only through years of experience in the workshop of human living; in working with fellow man, be he patient, employee, administrator, colleague, student, or general public. Attendance at professional meetings gives excellent opportunity for continued learning.

And the world of books is always at hand. "Reading maketh a full man," said Bacon, and we need to cultivate the reading habit. In this day of radio and television, reading is in danger of becoming a lost art. Reading must always be accompanied by active work on our part, the work of thinking, because to think requires real effort. It is difficult to weigh the words, to analyze their meaning, to sift the true from the false. We need to do this today not only in our professional thinking to detect what is quackery and faddism, but in our thinking as citizens—and in this period of moral and political confusion to be able to distinguish truth from half-truths. We need to make up our own minds on each question and not have them made up for us by radio, or psychiatrists, or some review article.

We are the ones who should be developing new ideas in our field—ideas that come from an experimental mind, determining the evidence before we make a decision. The development of new ideas, or at least the willingness to accept new ideas (if based on adequate experimental data) is a prime characteristic of leadership. The history of medical science is full of examples of how progress was held back by failure to accept new ideas. Ambrose Paré (1510 to 1590), the great French founder of modern surgery, showed that a new method of treating wounds instead of the old way of pouring in boiling oil caused successful healing, but he was assailed on all sides for such practices. William Harvey, who in 1628 published his theory of circulation, found that his medical practice immediately fell off and none wanted to accept his new idea. Cromwell's physician allowed him to die of chills and fever (malaria) rather than use the newly discovered cure of the

Peruvian bark, quinine. Jenner's work on vaccination against smallpox was violently opposed, and René Laënnec's new instrument, the stethoscope, was called useless wood. Semmelweis was hounded into insanity and death because others would not accept his clearly demonstrated method for prevention of childbed fever, and Lister's antiseptic treatment of wounds was scoffed at on all sides. Professional leadership demands that you continue to study, learn, and accept new ideas and to have the courage to go on in spite of opposition.

Equanimity. Osler wrote one of his great essays entitled "Aequanimitas" (4), and it is the title for a collection of his essays in book form. To maintain our equanimity will be for most of us a deliberate effort—determination not to let little things irritate us but to fix our eye on the real goals. "Little things are only great to little men," and we must not expect too much of the people with whom we work.

An appreciation of life itself and the joy of living will help us achieve some of this equanimity. All are not born with a sense of humor, but we can achieve some measure of it. We need not smile incessantly or tell funny stories all the time, but we can at least look as if we appreciated life; we can keep the *B. acidophilus* in the buttermilk and not let it get into our spirits and sour us on life. Osler said to the physicians, "It is unpardonable to go among patients with a long face," and that admonition is just as true for the dietitian.

LIVE AS IF YOU BELIEVED IN YOUR PROFESSION

Finally we must live as if we believed in our profession. The Association in the beginning was composed almost entirely of hospital dietitians. But since 1917, there have, in the intervening thirty-five years, been marked advances in our knowledge of nutrition and dietetics. We have recognized not only the therapeutic values of food but also the importance of teaching normal nutrition to the public. Thus we have an increasing membership of community nutritionists, school lunch personnel, food service directors, and teachers of nutrition. No matter how perfectly equipped the kitchen or nutrition laboratory, no matter how well trained the personnel or efficient the service, no matter how effective the records and food cost control system, it is the personal influence of the dietitian on the dietetic intern, of the teacher on the student, of the nutritionist on her families that determines the fate of our profession.

To us the Code of Ethics must be something to live by, not just something to read; ours must be an example of gentleness, forbearance, and courtesy when dealing with the sick; of cooperation and coordination with the medical and nursing team; of understanding that our techniques and skills are for the human being and not for the disease or the subject matter; and finally, of realization that dietetics is an art, the application to living of the science of nutrition.

The facts of nutrition we must *know*. The truth of it we all must *demonstrate*. We must *look* the picture of good nutrition; an overweight dietitian, a continuously weary and fatigued dietitian not only harms herself but harms the whole profession. We must *do* it ourselves as well as teach it to others. Neither you or anyone else can break the laws of nutrition without paying for it sooner or later.

We are the privileged people because we have the knowledge that can protect health. We also are privileged because we can exert tremendous influence on the lives of other people. I say we *can* exert; whether we do or not depends on the type of professional leadership we as individuals give.

LOOKING TO THE FUTURE

Thus we face the future. We have a fine profession in the true sense of the word—but it must not be static. We must continually analyze ourselves and what we stand for. Our attention must be focused on encouraging suitably qualified young people to enter the profession. Our standards of education and training must be continually revised in the light of present-day trends. But the future is always determined by the present, by what we do now.

What I have offered you here are some ideas and ideals for consideration within the professional family. If some think it is too idealistic to be practical, let me remind you that ideals are what men live by and survive by. Look at all history and you will see that the downfall of nations came not from wars of conquest but because of the deterioration of ideals and of the moral fiber of the people. This is the time to strengthen our ideals—we need it as a profession and as a nation.

REFERENCES

(1) OSLER, W.: A Way of Life: An Address to Yale Students Sunday Evening, April 20, 1913. 2nd impression. London: Constable & Company, Ltd., 1914.

(2) HUDDLESON, M. P. A new profession is born. J. Am. Dietet. A. 23: 573, 1947.

(3) OSLER, W.: The master-word in medicine. *In* Aequanimitas, with Other Addresses to Medical Students, Nurses and Practitioners of Medicine. London: H. K. Lewis, 1904.

(4) OSLER, W.: Aequanimitas. *In* Aequanimitas, with Other Addresses to Medical Students, Nurses and Practitioners of Medicine. London: H. K. Lewis, 1904.

Development of a plastic coating for citrus fruit has been announced by the Citrus Industry Research Association in Santa Paula, California, according to *Food Field Reporter*. By coating fruit with this plastic, shipment six to eight months after picking will become possible. Small initial shipments of oranges and lemons are expected to begin this spring.

How We Are Doing It in England[1]

EDITH WALKER, O.B.E.

Director of Emergency Feeding, British Ministry of Food, London, England

IN LONDON in December 1951, a Conference on Food Aspects of Civil Defense was attended by delegates from the United States, Canada, and Great Britain. Those of us in the British Ministry of Food who are working on the plans for feeding Great Britain in the event of a future war had an opportunity then of putting before our colleagues from overseas the outlines of our plan of campaign in the light of experience gained in World War II and of a review of the progress made to date. We listened to the account of work being done in the United States and Canada.

At this Conference we found a great similarity in the problems which were facing both our nations, and we are continuing to learn a very great deal from one another. For example, we were particularly struck by the usefulness of the paper containers which were circulated at the London Conference by Homer Calver of the Paper Cup and Container Institute, and as a result we have been considering most seriously the possibility of introducing them in Great Britain. In our case, there is a raw material problem, but we may be able to overcome it. I mention this matter as one example of how we can profit from studying each other's techniques.

In planning for a service which will help people in emergency, a conviction has grown upon me that one must know and understand those people, must know and understand their probable reactions in an emergency. Those people must be one's own people, and their probable reactions one's own probable reactions. Therefore, I will try to tell you of the plans we have made and are making for our own people.

RESPONSIBILITY FOR EMERGENCY FEEDING IN GREAT BRITAIN

In Great Britain the various civil defense responsibilities have been placed upon the minister whose department deals in peacetime with the most nearly analogous work. The Minister of Food is, therefore, responsible for emergency feeding, the Minister of Health for rest centers. There is, however, full coordination through constant consultation at headquarters level and through the fact that the local body responsible for the executive work is the same in each case. The Councils of the counties and the larger cities and towns are responsible for making plans for the various phases of civil defense work and for seeing that those plans are coordinated.

What do we in Great Britain mean by the term "emergency feeding"? We mean the feeding of people who, because of war or the threat of war, are unable to cook or eat in their own homes or to use the ordinary catering facilities. Meals provided under emergency feeding may be served at any convenient place—at an Emergency Meals Centre, at a Rest Centre, in a restaurant, in a motion picture house, from a canteen, or from a mobile van. They could consist of a hot drink and snack, a stew-type meal, or a main two-course meal.

Every man and woman at home knows that if Great Britain is at war in Europe, the enemy would try to bomb our industries and our homes. It happened in World War I, it happened in World War II, it would happen again. We think we may need to face all types and weights of bombs—incendiary, high explosive, projected missiles, and atom bombs, and even other forms of attack that might come upon us with little warning.

LESSONS OF WORLD WAR II

The experience of air raids in World War II taught us in Great Britain certain things. It taught us that under air attack a most important quality both in the individual and in government is the ability to improvise. It taught us that in the confusion of war, answers must be found locally and that the most important things are individual leadership, individual and local initiative, and mutual aid.

It taught us that food immediately available is vital in civil defense. Before World War II we had underestimated its importance. We learned that it is more important to feed the survivors than to bury the dead. It taught us that the food provided must be easily prepared, easily consumed, and familiar.

[1] Presented at the 35th Annual Meeting of The American Dietetic Association in Minneapolis, on October 22, 1952.

We learned that people who are "bombed out" needed a hot drink and a snack—for us, this meant hot sweet tea, or soup with bread, or biscuit and a spread—to be followed by the stew-type meal which could be easily and quickly prepared.

It taught us that equipment was useful only if it was in the right place when it was needed; that equipment must be mobile and transportable. It taught us the importance of enlisting in emergency feeding plans the full support of commercial caterers, restaurateurs, and all others who sell meals.

It taught us that we must encourage people to get back as quickly as possible to cooking and eating in their homes or in the homes made available to them.

Most of all, it taught us the importance of women in civil defense, particularly in emergency feeding. Just as the most important person in the feeding of every family is the woman of the house, so in the feeding of a community, the women hold the most important place. In the actual operation of emergency feeding, we rely almost entirely on the interest and skill of women.

PLANS BEING MADE IN GREAT BRITAIN TODAY

With these lessons in mind, but realizing that you cannot fight the next war on the basis of the last, we in Great Britain are making comprehensive and detailed plans at all levels for emergency feeding in the event of a future war. Responsibility for making local plans and, in time of war for carrying them out, has been delegated to the County Councils and the Councils of the larger cities and towns which we call "Emergency Feeding Authorities." Each of the 195 Emergency Feeding Authorities has completed or is in sight of completing the following tasks.

It has appointed an Emergency Meals Officer. It has surveyed all local cooking facilities, has selected and earmarked Emergency Meals Centres, has made a census of mobile canteens, and has initiated training schemes in emergency feeding. It is making a plan for feeding its people in a war emergency which will provide for a minimum of 10 per cent of the peacetime population in evacuation areas at one cooking, and 5 per cent in other areas. These plans are being submitted now, and we in the Ministry of Food are looking to see that all catering facilities—publicly owned, commercial caterers, and school lunchroom services—have been used in each plan and that these interests have been welded into a team; that every possible source of help has been considered and that no Emergency Feeding Authority is relying too much on one service.

From these plans, we have seen that the home economics staffs of the counties and cities will play a very important part in the organizing and in the executive work of emergency feeding because they are the trained personnel which form the keystone of most plans. Working very closely with them are the members of the Welfare Section of our Civil Defence Corps, many of them members of the Women's Voluntary Services for Civil Defence, which played such an important role in World War II.

We have established a Catering Advisory Committee in each of our Regions. The main purpose of these committees is to advise our regional officers on the catering aspects of emergency feeding and the caterers who are members of the committees are giving a great deal of help. We have also arranged for caterers nominated by the trade to act as liaison officers with Emergency Feeding Authorities.

Our emergency feeding scheme, of course, depends on and is dovetailed with the basic planning for food supply and distribution for the country as a whole; indeed, it is one part of the general plan for the provision of food in wartime.

FOOD SUPPLIES FOR EMERGENCY FEEDING

Within the next few weeks each Emergency Feeding Authority in Great Britain will receive instructions as to how, as soon as the word is given, it will be able to draw reserve stocks of tea, sugar, margarine, biscuits, soup powder, canned milk, preserves, canned meat, canned beans, and other vegetables. These initial reserve stocks will be drawn from wholesale or retail suppliers nominated by Emergency Feeding Authorities. The Emergency Feeding Authorities will be told how they can replenish these supplies and how they can arrange for supplies of fresh foods to be made available for emergency feeding. However, since they may not always be able to get exactly the foods they would like to have, they must be able and prepared to use whatever food is available.

TRAINING FOR EMERGENCY FEEDING

We are training our people to use improvised and transportable solid fuel equipment, knowing that after a heavy air attack we must be ready for interruption in public utilities. We are also teaching our people to build and utilize the improvised cookers made of bomb rubble, mud, and old iron, used so successfully in Southeast England in the last war and used by our Army for field cooking in many campaigns. These cookers may range from the simplest curbside cooker to quite robust ranges and ovens suitable for most elaborate field services. We are doing our utmost to see that every large town and city is making training plans to insure that every householder, every school, every caterer, every industrial canteen, every hospital and institution shall know how to make and to use these improvised cookers.

We are teaching our people to use the transportable solid fuel equipment, stocks of which we are now building up as regional reserves. This equipment consists of three main items: the Soyer boiler, which was invented by a Frenchman, Alexis Soyer, at the time of the Crimean War and has been used

ever since by our Armed Forces; and two types of all-metal cooking ranges—a large heavy one which, with six Soyer boilers, is capable of turning out 500 main meals or 1600 stew-type meals at one cooking, and a smaller one which can be easily moved and assembled by women. Three of these smaller cookers and six Soyer boilers can be used to cook 500 main meals or 1600 stew-type meals. Insulated containers, as used by our school meals service, will be used for the wider distribution of the hot cooked food to the serving sites.

During the last war we had a convoy service. We have now re-established that service and have a fleet of 165 vehicles which are stationed in half-convoy units at strategic points throughout the country.

SPECIAL PROBLEMS OF ATOMIC ATTACK

During the last war most of the big towns in Great Britain experienced heavy raids from incendiary bombs and high explosive bombs, and some from guided missiles. Happily they were not called on to face atomic attacks. We are doing our utmost, however, to prepare our civil defense organization to face atomic attacks in the event of another war.

During this autumn and winter, the Emergency Feeding Authorities in our ports and large industrial towns are studying, with their neighbors, the problem of how they will feed their people if an atomic attack is launched against their town. The narrative of each study gives a realistic picture of the damage which might be done and of the number of people who might be made homeless. We have asked these towns for detailed plans as to where, in the event of such an atomic attack, the town could feed its people, with what equipment, from where it could draw its trained workers, and how much food it estimates it will need, so that panic may be allayed and the homeless assembled at manageable points where essential workers can be assigned to duties and arrangements made for the billeting of children and old people.

PRINCIPLES TO FOLLOW

Therefore, in making plans for emergency feeding, the advice I would give comes under the following headings:

Decentralize. It is the help that comes quickly that restores morale, and help can only come quickly if it is local, provided by the town itself, by the people in one's own street or one's own block.

The plan you make beforehand will not necessarily be the best plan. Very probably it will not be —war is never as you expect it to be, but people must not suffer while officials try frantically after an air raid to turn a vague plan into a workable scheme.

See that you enlist the cooperation of all commercial caterers, restaurateurs, and all others who sell meals.

Plan for simple meals—easily prepared, easily consumed, of food that is familiar—the hot sweet drink and snack or the stew-type meal, for example.

Get away from emergency feeding as quickly as you can. By every means in your power encourage the people to return to their normal way of life so they may go on working to win. Remember that the aim of civil defense, equally with the fighting forces, is to *win* a war.

See that careful consideration is given to emergency feeding in civil defense exercises. At such exercises and studies, hours and days are often devoted to discussing transport, fire-fighting, rescue work, and care of the injured. Often the problems of feeding thousands of homeless people is dismissed in eight comfortable words: "The Emergency Feeding Authority will make adequate arrangements."

Let your training be realistic. Take into account the probable failure of public utilities after a heavy raid. See that your emergency feeding equipment is mobile and transportable. See that improvisation is the keynote of your training.

Study very, very carefully the best way of appealing to women—every kind of woman from every kind of street or homestead—to enroll and train for emergency feeding work. We have found that practical training in the use of emergency equipment, particularly in the use of the improvised field equipment, is the best way to arouse their interest. The appeal to a woman to undergo further practical instruction in a skill with which she is already familiar, so that she may help others in times of crisis, persuades her to realize her personal responsibility.

TRAINING

I began this paper by referring to the Conference held in London a year ago. I should like to end it by reading a quotation from its report:

> Training in emergency feeding must be training for survival—training in improvisation. It is of first importance to train people to prepare and serve meals under extraordinary conditions. Every community has cooks ranging from the housewife to the commercial chef; few people know how to improvise or how to operate when the usual hygienic safeguards are lacking. Training for emergency feeding must be simple, clear and practical. The basic staff need not know the theories of modern warfare, they must know how to do what they must do. This can only be learned by building or using improvised equipment. Both kerbside equipment and transportable units should be available in civil defence training schools. Recruiting will be greatly stimulated if training is realistic and equipment is available for people to see and use.

FOOD IS VITAL IN WAR

To sum up, my message is this: *food is vital to war.* Remember Napoleon's dictum, "An army marches on its stomach." Failure to feed can lose a war, as the Germans found in 1918. The standard of courage of people under and after air attack is very often in direct relationship to the emptiness or fullness of their stomachs.

Today's Word on Tomorrow's Equipment[1]

CLARICE D. GULLICKSON

Chief, Administration Section, Dietetic Division, Department of Medicine and Surgery, Veterans Administration, Washington, D.C.

If your childhood imagination was nourished by repeated reading and living of Alice in Wonderland as mine was, you will vividly remember the part of the story where Alice stepped through the looking glass and found herself with the Red Queen in a country cut up into blocks like a chess board. They both ran very hard 'till Alice was quite exhausted, but, when the Red Queen allowed her to rest, Alice found they were still in the same place, by the same tree. Alice was surprised and told the Queen that in her country she would have expected to get somewhere after all that running. "A slow sort of country," said the Queen. "Now here, you see, it takes all the running you can do to keep in the same place." Things are happening just that fast in today's development of equipment for tomorrow. It takes all the running we can do just to keep in the same place. Today's tempo is speed and, like Alice we must travel a fast pace if we hope to keep abreast with equipment in the making.

With the help of leaders in industry[2], I have been like Alice as I have looked into the crystal ball and learned of the new developments about to take place, and I am very grateful to all of these people.

Have you ever wondered how a piece of equipment is born, how long it takes to develop, and how much the development costs? Every product is on the market because there is a demand for it. After an idea has been established, there are three spheres of influence which must work together in the innovation of every new item—the consumer, the creative engineer, and the designer. Research explores the over-all feasibility of the contemplated item, how it may be made, and how it will be sold. The engineer strives to perfect its mechanical operation. The appearance designer develops visual presentation of the new idea, many times after the consumer has expressed a desire for it. After the design has been selected, clay models are constructed to permit an appearance study of three-dimensional forms. Clay is extremely flexible, allowing the designer to study the shape from various angles and to refine contours. A second model is then built in plaster, complete to the smallest detail, and this is further developed until a finished model is achieved. It may take as long as seven years for the development of a new product with a cost of as much as $300,000 before the first sale is made and the first dollar returns to the manufacturer.

DISHWASHING EQUIPMENT

Probably the most expensive department in any kitchen is the dishwashing activity. Very elaborate machines have been produced which sell for as much as $12,000 or more. Yet they are not machines in the true sense of the word, because they must be completely surrounded by human labor; in fact, labor represents 80 per cent of all dishwashing costs. Do you know that a dish machine during 1 hr. of operation generates enough heat to warm three ordinary five-room brick houses from a temperature of 10° below zero to 70° above zero subject to a 15-mi. wind?

Research work at the National Sanitation Foundation and at Michigan State College has demonstrated the possibility of cleaning and sterilizing dishes in 3 seconds by applying high-pressure water. This may be the forerunner of a single-tank machine operated by one person which will handle more than the present three-tank machine.

It may also be possible to use a greater amount of vertical space and less horizontal space for such a machine. The National Sanitation Foundation now has a glass washing machine which will unscramble a tray of glasses, set them into the machine, send them through a vertical washing operation, and unload them on a platform completely cleaned and dried.

The in-draft at each end of the newest machines on the market pulls the vapor out of the machine and removes it through pant-leg ducts. A meter developed to indicate the amount of detergent in the wash tank of dishwashing machines has now been

[1] Presented at the 35th Annual Meeting of The American Dietetic Association in Minneapolis, on October 24, 1952.

[2] Twenty leaders in the field of industry, including Col. Paul P. Logan, Director of Research, National Restaurant Association, and George Anderson of the Quartermaster Corps, contributed appreciably to the material for this presentation.

perfected which also shows the degree of contamination of the rinse water. Thus the operator will know when the water in the rinse tank is acceptably clean and when it should be changed. In addition, proportioning equipment is being evolved which adds a small amount of synthetic wetting agent to the final rinse lines of the machine, thus reducing drying time. Additional work has been done on the chemical drying of flatware to avoid toweling and on special bacteriostatic detergents for use in silver washing machines.

We have mentioned high-pressure water in relation to dishwashing. How would you like to shoot the crusted food particles from a baking pan with a spray gun? The principal factor involved is compressed air. This doesn't seem too unlikely when you realize that the same principle is used in sandblasting a building. Such a unit is now being tested.

HEAT-TRANSFER EQUIPMENT

The heat inputs for deep-fat fryers have been revolutionized in the last two years, largely due to field experience and to research findings. As a result, all of the equipment manufacturers are now planning new fryers with high-speed temperature recovery and minimum fat usage. Commercial models are in production and in use. A simplified method of pre-determining performance of deep-fat fryers is being worked out in order to establish purchase specifications for superior equipment.

An airline is currently using a conduction cooker for the processing of fried chicken, which is cooked in the central production kitchen and shipped to outlying meal-loading points. This cooker is particularly interesting since it is a considerable departure from the ordinary deep-fat fryer. It contains perforated, cast-aluminum plates on which the food is placed and then all is submerged in hot fat. The direct contact with the heat in the plate starts the cooking, maintains an even temperature of fat because of the reserved heat, and results in a product which is not fat soaked, does not shrink, and cooks in less than half the time ordinarily required.

Experiments are under way in the field of commercial gas ovens which entail the use of snap versus modulating controls coupled with higher heat inputs which would give greater capacity and faster baking. This program is still in the developmental stage, but is most promising.

Food service authorities recognize that a very substantial proportion of cooking is a matter of science, yet instruments of control have not been provided to assure that the scientific part of cooking is properly carried out. The ovens of today are not very accurate in heat transfer. The thermostat is activated by convected heat, and the deck is without control. It is quite possible to find a variation of 100 degrees between the deck and the atmospheric temperatures in an oven. Every piece of heat-transfer equipment should, and one day will be equipped with a thermostat which will maintain the temperature within 5 degrees of the point desired and indicated. To show the exact temperature being used, it will have a dial-type thermometer visible at a distance of not less than 10 ft. A timing device will automatically turn the heat on and off at the hour indicated.

A few preliminary tests of infra-red radiant energy give great promise for dry heat cooking which will be not only very accurate in temperature control, but will open up an entirely new concept of roasting and baking. Three years of experimental work indicate that products roasted by infra-red energy invariably have a flavor far superior to the same products cooked in a conventional oven.

A new contact-type oven is being designed for airlines, in which the electric elements will be located in each shelf. Thus, by means of direct contact, the foods will be heated or even cooked directly.

Quite generally through the commercial range field, gas equipment manufacturers are planning units which are completely automatic in lighting and are protected by safety pilots. This trend is already in full swing and will offer notable improvement in convenience and safety.

Reconstitution of pre-cooked, pre-portioned frozen food will call for an entirely different type of heat-transfer equipment than is now available. In view of this trend, the gas industry is also studying designs of equipment specifically adapted to turn these packages promptly into finished, ready-to-eat portions.

It appears that in the coming years there will be greater use of specialized cooking equipment, such as steamers, small steam-jacketed kettles with thermostatic control, roasting ovens, broilers, and deep-fat fryers. Less use will be made of the range, for many years the jack-of-all-trades in both hospital and other kitchens.

Much has been heard about electronic cookery, but experts in this field do not feel that they are close to anything startling in the way of general purpose practical applications. It is possible that in another five or ten years, some new and important uses will be found for this media.

OTHER EQUIPMENT

A portable refrigerator will soon be on the market. This will make it possible to load foods to be chilled, such as desserts, in the central preparation area directly into the refrigerator, from which they will be served later in a distant serving unit.

For use in ward serving kitchens, a special garbage grinder has been designed which incorporates the hush or quiet features of the domestic unit. It is versatile in that it can be mounted or hung in a

sink. Instead of being compressed against a table, it is suspended, and vibration is within the machine.

Special aerators will not only add the water to coffee, fruit juice concentrates, and soup and aerate them, but they will bring the products back to their original state in regard to flavor and taste.

APPLIANCES

Most manufacturers have research and development programs under way which should result in superior performance in kitchen appliances of all types. This will mean greater speed and more automatic cooking with the subsequent lowering of overhead and a reduction of personnel.

There will be more pushbutton operations for serving foods in the correct amounts. Various large chain organizations are fostering this type of service both for soda fountain and cafeteria operations to cut labor costs and to provide controlled servings of portions.

Items of fabricated equipment which have previously been placed in a fixed position are now being mounted on casters for ease of location throughout the kitchen area. Casters are also being applied to under-counter shelving. Standard size shelf trucks are now equipped with swivel casters having locking devices. This provides convenience in handling materials and makes hard-to-get-at places more accessible.

TABLEWARE

The latest research on chinaware has resulted in a method for overcoming the scuffing and wearing off of the glaze. It was discovered that the damage to the glaze is caused not simply by the blows it receives in service, but by the fact that the china surface is so clean after modern dishwashing that it has the property of "seizure." It is this tendency of the glaze of one piece of ware to "grab" or seize on contact with the glaze of another piece that has led to the damage and deterioration. Research scientists have learned that under present conditions, when one plate is stacked on another, the impact has the same effect as that of a steel shaft on a steel bearing. In mechanics, bronze or some other material is used for the bearing to avoid seizure. In the case of china, by creating some difference between the surfaces, abrasion is avoided. This can be accomplished by having a harder glaze on one surface of the plate than the other; the slight difference in hardness is sufficient to eliminate the seizure. Such plates, when tested in a machine developed at the National Bureau of Standards which puts the equivalent of ten years' wear on the plates in 48 hr., showed practically no deterioration.

This development, in conjunction with the new methods and equipment used in handling chinaware, is expected to reduce its costs materially when extended over the service life. It will also be possible, with this new treatment, to keep decorations clear and colorful throughout the ware's service life.

Glass tableware of the future will combine beauty, durability, and utility beyond that ever before seen. Surface glazes will be eliminated, the body of the material being uniform throughout. Surface wear will be reduced, and the high lustrous beauty will be maintained at all times. This ware can be easily cleaned and sterilized or subjected to acids and detergents without fear of dulling, crazing, chipping, or cracking. It will be practically unbreakable. Cup handle breakage will be a thing of the past. A wide variety of shapes and designs will be available which will blend with ovenware and top-of-stove ware made of similar materials. This ware can be used for freezing foods, for refrigerator storage, oven baking, and table service. It can be transferred immediately from the freezer or refrigerator to the oven, and from the table to the freezer, if desired. It will be light in weight, as well.

Decorations, too, will be attractive and durable, extending into and through the body of the ware, and they will not be marred or destroyed by continual use. Patterns of all types will be available, from lacy transparent and opaque designs to lustrous, three-dimensional figures. A wide choice of colors which will be either delicately translucent or opaque will be offered. Designs suitable for home and institutional use will be possible. Above all, the ware will be reasonable in price, allowing the user a variety of groupings to blend with changing decorative schemes without excessive cost.

Rapid strides are also being made in the plastic industry. There are new materials available for molding: the Lustrex L. T., a high-impact styrene molding compound, as well as C-11 Bakelite polystyrene material can be molded into lightweight tableware which is said to be stain and breakage resistant.

Aluminum companies are experimenting with color finishes for trays and other items, and increased use of disposable tableware can be expected in small areas to cut down or even eliminate dish and glass washing.

FOODS AND LAYOUTS

It is not unreasonable to presume that the public feeding industry will pass on to the manufacturer or processor of food a very substantial part of the work now being done in the kitchen. We are all familiar with frozen fish fillets, cut-up and ready-to-cook poultry, prefabricated frozen meats, frozen fruits and vegetables, and other similar items. The use of pre-cut butter and margarine, commercially peeled potatoes and apples, and various dessert and baking mixtures is growing in importance.

This means that the feeding establishment of the future must have adequate storage facilities for frozen foods and for actual freezing of kitchen-made products. It is predictable that the diet kitchen of a

hospital will, one day, be operated on a factory-production-like basis, preparing in three to six months the supplies for various types of diets which, after cooking, will be frozen for future use.

FOOD PRESERVATION METHODS

But as we look farther through the looking glass, there lie even greater fields, such as may now be visualized in the aseptic canning process and the use of electric bombardment by high voltage to sterilize products. It has been demonstrated that the bombardment of fresh cuts of meat, packaged in moistureproof containers, by 3 million volts of electricity will cause the meat to remain fresh over a considerable storage period without refrigeration.

The rapid strides made during the past decade in the field of food technology and in the science of food engineering indicate that the foods of the future will be handled quite differently from those of the past, and these changes will necessitate the development of kitchen equipment to keep pace with the new products.

BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Hippocrates—460 B.C.

Hippocrates, the Father of Medicine, was also a writer on nutrition and a firm believer that simple diet was the best way to treat disease. He taught that drugs frequently intensified the effects of dietetic treatment, and only when these methods failed should the physician resort to surgery and cautery.

Much has been written about Hippocrates, and there are numerous anecdotes and fables about him, but little is known except that he was born at Cos in the fifth century B.C., and was famous as a physician and teacher, and he travelled widely. This is learned from the writings of his contemporary, Plato. All else is speculation; even the numerous writings attributed to Hippocrates cannot be identified as his and are a collection of works by many writers.

Hippocrates put medicine on a scientific basis; he studied the individual patient and treated the patient rather than the disease; he made careful case histories; he introduced bedside teaching; he set standards for physicians to follow; and he gave an ethical basis to medicine. Hippocrates divided diseases into acute, chronic, endemic, and epidemic classes. He also introduced the doctrine of the four humors of the body: blood, yellow bile, phlegm, and black bile; and it was believed that the humors were regenerated by food.

The Hippocratic writings give a valuable picture of medicine as it was taught and practiced by the Greeks in the fifth and fourth centuries, B.C. Of these many writings, the Aphorisms of Hippocrates were used as textbooks until the beginning of the nineteenth century and provided a code of teaching and medical principles that sound quite modern in many ways. The first English translation of the Aphorisms was made in 1599 by a Scottish army surgeon, Peter Lowe (1550–1612), and the best known translation is that of Francis Adams, done in 1849. One familiar aphorism is: "Life is short and Art is long; the Crisis is fleeting, Experiment risky, Decision difficult; Not only must the physician be ready to do his duty, but the patient, the attendant, and external circumstances must conduce to the cure."

Some of the statements on nutrition have a modern sound. "Those naturally very fat are more liable to sudden death than the thin." "Old persons use less nutriment than the young." "In winter, abundant nourishment is wholesome; in summer a more frugal diet." "If you give the same nutriment to a patient in fever and to a person in health, the patient's disease is aggravated by what adds strength to the healthy man."

Hippocrates' advice to the physician might well be translated to apply to the dietitian of today. He wrote: "The dignity of a physician requires that he should look healthy and as plump as nature intended him to be; for the common crowd consider those who are not of this bodily condition to be unable to take care of others."

REFERENCES: Singer, C.: A Short History of Medicine. New York: Oxford University Press, 1928, pp. 13–26. Sigerist, H. E.: The Great Doctors, translated by E. and C. Paul. New York: W. W. Norton and Co., 1933, pp. 29–37. Garrison, F. H.: An Introduction to the History of Medicine. 4th ed. Philadelphia: W. B. Saunders Co., 1929, pp. 92–100.—*Contributed by E. Neige Todhunter, Ph.D., Head, Department of Foods and Nutrition, University of Alabama, Tuscaloosa.*

Fluorine in Human Nutrition[1]

H. H. MITCHELL, Ph.D., and MARJORIE EDMAN[2]

Division of Animal Nutrition, University of Illinois, Urbana

FLUORINE is the most reactive of the chemical elements, so reactive that it does not occur free in nature. From the biologic standpoint, one might presume from this fact that if fluorine is an essential element in animal life, its daily requirement would be extremely small, and if it is toxic, its toxicity would be evident in homeopathic doses.

Its essentiality to animal life has never been demonstrated conclusively. Attempts to raise laboratory animals on synthetic rations containing minute concentrations of fluorine have been generally successful. If fluorine is essential, the required concentration in the diet on the dry basis would seem to be less than 0.5 p.p.m.

In animal nutrition, the ingestion of fluorine, when its effects are evident at all, is detrimental in varying degrees from the standpoint of animal industry (1). On the other hand, in human nutrition fluorine plays a Doctor-Jekyll-and-Mister-Hyde role. At low levels of intake, it promotes the formation of teeth that are very resistant to decay, by entering into the composition of both dentine and enamel; indeed, it may be essential to the formation of a normal tooth (2, 3)

It also combines with bone minerals (4), but no favorable effects of fluorine in this tissue have been detected or suspected. At higher levels of intake, however, it exerts detrimental effects on both tooth and bone, resulting in both tooth, and later, bone deformation.

NORMAL FLUORINE INTAKE AND THE INNOCUOUS LEVEL

The wide distribution of fluorine in waters and minerals and in plant and animal tissues assures a constant supply in human nutrition, whether for better or for worse. The larger intakes of fluorine are associated with the consumption of water containing 1 p.p.m. or more of fluorine. In areas of low-fluorine water supplies, food may be the dominant source of this element in the diet, particularly sea foods and tea. Fifty gm. canned sardines may provide 0.8 mg. fluorine (5), while one cup of tea may increase the fluorine of the diet by 0.2 mg. (6); it has been estimated (7) that in New Zealand the drinking of tea may contribute 0.45 to 0.93 mg. fluorine daily. Baby foods containing bone meal, or other fluorine-bearing phosphates, may contribute significant amounts of fluorine to the day's food (6).

The daily intake of fluorine in areas affording no unusual fluorine exposure has been variously estimated at 0.5 mg. or less (6, 8) to somewhat over 1 mg. (9). At these low levels of intake, the intake and output of fluorine are equal over many weeks with a maximum deviation from equilibrium of ± 10 per cent (8). In tests at the University of Cincinnati, 80 per cent of the fluorine consumed failed to appear in the feces and was excreted in the urine. At a daily intake of 6 mg. fluorine, definite retention occurred (10), the magnitude of which depended upon the fluorine compound tested but particularly upon the amount of fluorine "absorbed" (intake minus fecal content). In fact, at the 6-mg. level of intake, the proportion of the absorbed fluorine retained in the tissues (mainly the phosphatic tissues, bones, and teeth) was fairly constant at 52 per cent irrespective of the form in which the fluorine was given (sodium fluoride, calcium fluoride in solution or in solid form, cryolite, or bone meal). At higher levels of fluorine intake, up to 36 mg. daily, the percentage of absorbed fluorine retained decreased to 34 to 45 (11). According to Machle and Largent (10), a daily urinary output in adults of from 10 to 20 mg. of fluorine ". . . is consistent with good health for periods of at least 5 to 7 years." It is to be noted that Machle and Largent took no account of the excretion of fluorine through the skin, which may be considerable. When this path of excretion is considered, McClure *et al.* (12) found essentially no retention of fluorine in human subjects on 4 to 5 mg. daily intakes.

FLUORINE VS. DENTAL CARIES

Undoubtedly the most potent weapon in combating dental caries is the ingestion, most commonly in the drinking water, of certain minimal quantities of

[1] Received for publication September 18, 1952.

[2] The authors are very grateful to Dr. F. J. McClure, National Institutes of Health, Bethesda, Maryland, for his comments and suggestions in the preparation of this manuscript.

fluorine, more often as sodium fluoride. Dental caries is a major public health problem. In the United States a few years ago, a survey was made to determine the prevalence of tooth decay in children. It was estimated that about 50 per cent of two-year-old children have cavities, a figure that increased to 98 per cent as young adulthood was reached. In the late nineteen thirties and early forties, a combination of biochemical and epidemiologic studies of human subjects and populations, supplemented by animal feeding experiments, firmly established the existence of a close inverse relationship between the caries experience of man and animals and the fluorine content of the water (and/or food) supply. An immense literature on this relationship has developed in the last fifteen years, which has been well reviewed by Harrison and Bell in New Zealand (13), by Arnold in this country (14), and by Weaver and Mackenzie in England (15, 16).

The use of fluoridated drinking water during the formative period of the teeth is associated with a 60 to 65 per cent reduction in dental caries experience and about a 75 per cent decrease in first permanent molar loss as compared with the use of drinking water containing only traces of fluoride (17, 18). Also, one would expect to find six times as many children with no dental caries experience in communities supplied with fluoride-containing water as in communities supplied with water containing no appreciable amounts of fluoride. The maximum fluoride effect will be realized at a fluoride (F) concentration of 1.0 to 1.5 p.p.m., a range established by Dean as the minimum threshold concentration for an appreciable incidence of mottled enamel or dental fluorosis. From the results of Dean's epidemiologic studies of the fluorine-caries relationship, Hodge (19) found linear relationships between the number of DMF (decayed, missing, and filled) teeth, or the degree of tooth mottling per 100 children from twelve to fourteen years of age, and the logarithm of the fluoride content of the drinking water. The two lines intersect at about 1 p.p.m. fluoride in the water, indicating that this concentration may be described as the "point of maximum health with maximum safety." Obviously, however, this concentration is subject to variation depending on extraneous conditions. It would be expected to vary somewhat with the fluorine in the diet, with the environmental temperature, and with other conditions that modify water consumption (20, 21); whether the nutriture of the individual is a factor is not known with any degree of certainty (22).

Water containing 1.1 to 1.2 p.p.m. fluoride causes an appreciable increase of fluorine in the dentine (60 per cent) and in the enamel (30 per cent) of teeth continuously exposed to such drinking water (23). The consumption of water containing 1.0 to 1.2 p.p.m. fluoride will elevate the fluorine content of the blood (24), but not to dangerously high levels. An elevated fluorine content of the placentas of parturient women subsisting on this critical concentration of fluoride in the drinking water (25) is probably evidence of the protective function of this organ in barring the transfer to the fetus of potentially toxic substances. It has been shown with dairy cows that the mammary gland is also very resistant to the transfer of fluorine from blood to milk.

FLUORIDATION OF WATER SUPPLIES

The important investigations that established beyond doubt the validity of the fluorine-dental caries hypothesis have induced public health authorities and dental societies to advocate the deliberate fluoridation of water supplies in the United States. As a result of this stimulus, there were, as of last June, 233 communities which were adding fluoride to their water supplies (26). "Approximately 3,500,000 to 4,000,000 people are thus being supplied with fluoridated water." The Kingston-Newburgh (New York) experiments on water fluoridation have given encouraging results after five years of operation, (18, 27), as have also the Grand Rapids-Muskegon studies (17). A moot question at present is what benefits, if any, will accrue to adolescent children and adults from water fluoridation. Observations on human populations show that caries resistance acquired during tooth formation continues through adult life, whether fluoridated water is continued or not (28, 29). McClure (30) has presented evidence with rats to the effect that fluorides ingested post-eruptively and prior to administration of the caries-producing diet confer protection against caries associated with an elevation of the fluorine content of the teeth.

A more recent report by Russell and Elvove (31) substantiates the conclusion that the benefits of a fluoridated water supply extend beyond the period of tooth formation. It is based upon a survey of the dental status of natives twenty to forty-four years of age residing in two cities receiving communal water supplies differing widely in fluoride content. In one, Boulder, Colorado, the water supply is virtually fluoride-free; in the other, Colorado Springs, the water supply contains 2.6 p.p.m. fluoride. The total rates for decayed, missing, or filled permanent teeth were some 60 per cent lower in Colorado Springs than in Boulder for each age group, and, in the former community, caries inhibition continued at an undiminished rate through the age of forty-four years.

The development of water fluoridation has been summarized by Faber (32). Many fluoridating agents have been tested with laboratory animals, some with favorable results (33); the compound of choice has been sodium fluoride. According to Howell and others (34), there is insufficient evidence at present to justify the use of any fluorine compound other than sodium fluoride, except on a study basis, as the fluoridating agent of a communal water supply. However, any fluorine compound yielding the fluor-

ine ion in aqueous solution should exert a caries-preventive effect, and as a matter of fact, sodium fluosilicate is being used in numerous cities including Washington, D. C.

In view of the fact that the fluoridation of communal water supplies has been the subject of controversy for many years, the National Research Council in April 1951 appointed a committee of nine to review the evidence and prepare an impartial report on the subject. In an eight-page report (35), the committee recommended:

"In view of these considerations, the Committee recommends that any community which includes a child population of sufficient size, and which obtains its water supply from sources which are free from or are extremely low in fluorides, should consider the practicability and economic feasibility of adjusting the concentration to optimal levels. This adjustment should be in accord with climatic factors and a constant chemical control should be maintained. With proper safeguards, this procedure appears to be harmless. However, it should be conducted under expert dental and engineering supervision by the state board of health. It should not be undertaken unless this can be provided. How much reduction in the prevalence of caries will actually be realized in a particular community will vary according to local conditions. The procedure will supplement but not supplant other dental health measures. About one-half of the population of this country is living in small villages and rural areas and will not benefit by fluoridation of public water supplies. Other provisions for preventing dental caries in this fraction of the population should be continued and developed."

MOTTLED ENAMEL, FLUOROTIC OSTEOSCLEROSIS, AND INDUSTRIAL FLUOROSIS

The term "eufluorosis" has been proposed by Adler *et al.* (36) to express the optimal protection against dental caries without production of mottling. The term "dysfluorosis" might be used to designate the unfavorable effects of intakes of fluorine beyond the eufluorotic level, represented by a concentration of 1 p.p.m. fluoride in the drinking water.

Fluorine begins to assume its dysfluorotic, or Mister-Hyde role at levels of intake equivalent to about 1 p.p.m. in the drinking water, but the transformation is not a sudden one, as in Stevenson's fictional character, but a gradual one extending over a wide range of intake and over long periods of time.

The relationship of fluorine to mottled enamel (chronic endemic dental fluorosis) was discovered in 1931 independently by three workers, M. C. Smith in Arizona, H. V. Churchill in Pennsylvania, and H. Velu in Morocco. It develops generally during the formation of the permanent teeth; the deciduous teeth are affected only at considerably higher levels of fluoride in the drinking water of the mother, because the placental transfer of fluorine is difficult. Starting at low levels of water fluoride, mottled enamel is merely an esthetic blemish, characterized by opaque white spots, bands or patches distributed irregularly over the surface of the teeth. Brown mottling is a more extreme form of dental fluorosis associated with the consumption of water containing 4 p.p.m. fluoride or more (37). The more severe forms involve enamel hypoplasia over all surfaces; surfaces subject to attrition show marked wear and discrete or confluent pitting is prominent (38). According to Ockerse (39), continuous exposure to drinking water containing 6.8 p.p.m. fluoride in South Africa induces dental fluorosis in all children, in many cases "so severe that it is a predisposing cause of dental caries."

Generalized skeletal sclerosis, associated with the consumption of fluorides in the drinking water, has not been reported in the United States (40), although one isolated case has been observed by Linsman and McMurray (41). In Britain, some evidence of limited scope has been described by Kemp (42), suggesting that residence for thirty to forty years in a district supplied with water containing 3 to 4 p.p.m. fluoride may lead to disturbances in ossification and to early spondylosis deformans. In India (43, 44) and in South Africa (45), the evidence is more convincing, although water-borne fluorine may not be the sole factor involved. The osteosclerotic symptoms described by Pandit *et al.* (44) in subjects exposed many years to high-fluoride drinking waters are even more severe than those observed in industrial fluorosis.

The most severe forms of skeletal fluorosis would be expected among workers in factories using or producing fluorine compounds, or materials in which fluorine is present as an impurity. According to Wilkie (46), the osteosclerosis found in workers exposed to fluorine compounds was first described in 1932 by Møller and Gudjonsson during the examination of cryolite workers for pulmonary manifestations of exposure to dust. Roholm's monograph on fluorine intoxication (47) presents a very complete description of industrial skeletal sclerosis. Murray (48) refers to twenty-eight industries in Britain that use either fluorine compounds or materials in which fluorine is present as a contaminant, exclusive of industries using phosphatic iron ores or coals of high fluorine content. Industrial fluorosis takes years to develop and may never lead to physical disability, such as that due to spondylosis deformans, although roentgenographic examination may reveal increased bone formation from both periosteum and endosteum, hypercalcification of cancellous bone, and calcification of osseous ligaments and joint capsules. In addition to references already given, industrial fluorosis is discussed by Machle and Evans (49), Hough and others (50), Largent, Bovard, and Heyroth (51), and Agate *et al.* (52).

Agate and co-workers considered the occurrence of incipient signs of fluorosis, dental or otherwise, in

the people inhabiting the environs of the aluminum factory at Fort William, Scotland. Although the observed effects were small, ". . . the findings as a whole suggest that every possible step should be taken to reduce the amount of fluorine discharged from the factory." In this connection, a remark by Murray (48) is worth quoting:

"In towns or in their outskirts, where there is a concentration of factories, power-stations, and gas works, all or some of which may be emitting fluorine-containing gases, smokes or dusts, the absence of grazing animals may deprive us of what has hitherto been the only means of recognizing the existence of a source of danger. Several cases of marked dental fluorosis have been seen in persons born or bred in the eastern districts of London, where there is a great concentration of industrial undertakings."

In farm animals one cause of fluorosis in this country and abroad is the consumption of forage crops contaminated with fumes and dust containing the element, emitted from industrial plants (1). The consumption of such contaminated forage by grazing animals induces fluorosis much more quickly than the inhalation of the industrial effluents themselves.

Acute fluorine poisoning induces tetany which can proceed rapidly to death (53).

CONCLUSIONS

In human nutrition, the physiologic effects of fluorine are largely exerted through the drinking water, though there are some high-fluorine foods that may contribute significant amounts to the day's intake of fluorine, which generally, without undue exposure to fluorine, amounts to 0.3 to 1.5 mg. per day. At such low levels of consumption little retention occurs, but definite retention may occur at 4 to 5 mg. fluorine daily and perhaps at lower levels. The fluoride contained in waters carrying 1.0 to 1.5 p.p.m. exerts a beneficial and marked effect in preventing or retarding dental caries (eufluorosis). At higher levels, the effect is harmful (dysfluorosis), leading to severe disturbance of the functions of the ameloblasts and of the odontoblasts of the teeth (chronic endemic dental fluorosis, or mottled enamel) and eventually to osteosclerosis and calcification of the ligaments and joint capsules. These changes in the phosphatic tissues of the body are associated with increasing incorporation of fluorine in the bone and tooth substance. However, these effects are noticeable only after many years of exposure. It has been estimated by Machle and by Roholm that daily intakes of about 15 to 20 mg. fluorine, in the drinking water or in industrial exposure, over a period of several years is required to induce chronic fluorosis in an adult man.

REFERENCES

(1) Mitchell, H. H., and Edman, M.: The fluorine problem in livestock feeding. Nutrition Abstr. & Rev. 21: 787, 1952.

(2) McClendon, J. F.: Fluorine is necessary in the diet of the rat. Federation Proc. 3: 94, 1944.

(3) Rygh, O.: Causes of dental caries. Research 3: 193, 1950.

(4) Hendricks, S. B., and Hill, W. L.: The nature of bone and phosphate rock. Proc. Nat. Acad. Sc. 36: 731, 1950.

(5) McClure, F. J.: Fluorine in foods. Survey of recent data. Pub. Health Rep. 64: 1061, 1949.

(6) Ham, M. P., and Smith, M. D.: Fluoride studies related to the human diet. Canad. J. Res. 28F: 227, 1950.

(7) Harrison, M. F.: Fluorine content of teas consumed in New Zealand. Brit. J. Nutrition 3: 162, 1949.

(8) Machle, W., Scott, E. W., and Largent, E. J.: The absorption and excretion of fluorides. 1. The normal fluoride balance. J. Indust. Hyg. & Toxicol. 24: 199, 1942.

(9) Machle, W., Scott, E. W., and Treon, J.: Normal urinary fluorine excretion and the fluorine content of food and water. Am. J. Hyg. 29: 139, 1939.

(10) Machle, W., and Largent, E. J.: The absorption and excretion of fluorides. 2. The metabolism at high levels of intake. J. Indust. Hyg. & Toxicol. 25: 112, 1943.

(11) Largent, E. J., and Heyroth, F. F.: The absorption and excretion of fluorides. 3. Further observations on metabolism of fluorides at high levels of intake. J. Indust. Hyg. & Toxicol. 31: 134, 1949.

(12) McClure, F. J., Mitchell, H. H., Hamilton, T. S., and Kinser, C. A.: Balances of fluorine ingested from various sources in food and water by five young men. Excretion of fluorine through the skin. J. Indust. Hyg. & Toxicol. 27: 159, 1945.

(13) Harrison, M. F., and Bell, M. E.: Nutritional factors affecting the teeth. New Zealand Dent. J. 43: 5, 1947.

(14) Arnold, F. A.: An evaluation of the effectiveness as caries control measures of ingested fluorides in water, food, bone flour, and proprietary preparations. J. Dent. Res. 27: 267, 1948.

(15) Weaver, R.: The inhibition of dental caries by fluorine. Proc. Roy. Soc. Med. 41: 284, 1948.

(16) MacKenzie, E. F.: The prevention of dental caries by the administration of fluorine in public water-supplies. Lancet 262: 961, 1952.

(17) Dean, H. T., Arnold, F. A., Jr., Jay, P., and Knutson, J. W.: Studies on mass control of dental caries through fluoridation of the public water supply. Pub. Health Rep. 65: 1403, 1950.

(18) Ast, D. B., Finn, S. B., and McCaffrey, I.: The Newburgh-Kingston caries fluorine study. 1. Dental findings after three years of water fluoridation. Am. J. Pub. Health 40: 716, 1950.

(19) Hodge, H. C.: The concentration of fluorides in drinking water to give the point of minimum caries with maximum safety. J. Am. Dent. A. 40: 436, 1950.

(20) McClure, F. J.: Ingestion of fluoride and dental caries. Quantitative relations based on food and water requirements of children one to twelve years old. Am. J. Dis. Child. 66: 362, 1943.

(21) Levin, M. M., and Cox, G. J.: Water consumption in relation to environmental temperature and its significance in the fluoridation of water supplies (abstract). J. Dent. Res. 29: 663, 1950.

(22) Relation of malnutrition to fluoride toxicity. Nutrition Rev. 10: 227, 1952.

(23) McClure, F. J., and Likins, R. C.: Fluorine in human teeth studied in relation to fluorine in the drinking water. J. Dent. Res. 30: 172, 1951.

(24) SMITH, F. A., GARDNER, D. E., AND HODGE, H. C.: Investigations on the metabolism of fluoride. 2. Fluoride content of blood and urine as a function of the fluorine in drinking water. J. Dent. Res. 29: 596, 1950.

(25) GARDNER, D. E., SMITH, F. A., HODGE, H. C., OVERTON, D. E., AND FELTMAN, R.: The fluoride content of placental tissue as related to the fluoride content of drinking water. Science 115: 208, 1952.

(26) MCCLURE, F. J.: Personal communication.

(27) SCHLESINGER, E. R., OVERTON, D. E., AND CHASE, H. C.: The Newburgh-Kingston caries-fluorine study. 2. Pediatric aspects—preliminary report. Am. J. Pub. Health 40: 725, 1950.

(28) DEAN, H. T., JAY, P., ARNOLD, F. A., JR., AND ELVOVE, E.: Domestic water and dental caries. 1. A dental caries study, including *L. acidophilus* estimations, of a population severely affected by mottled enamel and which for the past 12 years has used a fluoride-free water. Pub. Health Rep. 56: 365, 1941.

(29) MCKAY, F. S.: Mass control of dental caries through the use of domestic water supplies containing fluorine. Am. J. Pub. Health 38: 828, 1948.

(30) MCCLURE, F. J.: Observations on induced caries in rats. 4. Inhibiting effect of fluoride ingested posteruptively and prior to the caries producing diet. J. Dent. Res. 22: 37, 1943.

(31) RUSSELL, A. L., AND ELVOVE, E.: Domestic water and dental caries. 7. A study of the fluoride-dental caries relationship in an adult population. Pub. Health Rep. 66: 1389, 1951.

(32) FABER, H. A.: Developments in fluoridation—a summary. Water & Sewage Works 98: 203, 1951.

(33) ZIPKIN, I., AND MCCLURE, F. J.: Complex fluorides: caries reduction and fluorine retention in the bones and teeth of white rats. Pub. Health Rep. 66: 1523, 1951.

(34) HOWELL, C. L., BURNEY, L. E., DAY, H. G., AND MUHLER, J. C.: Choice of fluoridating agents in the control of dental caries. Am. J. Pub. Health 42: 44, 1952.

(35) DIVISION OF MEDICAL SCIENCES: Report of the Ad Hoc Committee on Fluoridation of Water Supplies. National Research Council Division of Medical Sciences Pub. No. 214, 1951.

(36) ADLER, P., SÁRKÁNY, I., TÓTH, K., STRAUB, J., AND SZEVERÉNYI, E.: The connections between dental caries experience and water-borne fluorides in a population with low caries incidence. J. Dent. Res. 30: 368, 1951.

(37) FLETCHER, J. M., AND ROBERTSON, R. H. S.: Fluorine and teeth. Research 3: 23, 1950.

(38) DEAN, H. T., AND KITCHIN, P. C. (Moulton, F. R., ed.): Fluorine and Dental Health. Am. A. Adv. Sc. Pub. No. 19, 1942, p. 26.

(39) OCKERSE, T.: Endemic fluorosis in the Kenhardt and Gordonia districts, Cape Province, South Africa. J. Am. Dent. A. 28: 936, 1941.

(40) HODGES, P. C., FAREED, O. J., RUGGY, G., AND CHUDNOFF, J. S.: Skeletal sclerosis in chronic sodium fluoride poisoning. J. A. M. A. 117: 1938, 1941.

(41) LINSMAN, J. F., AND MCMURRAY, C. A.: Fluoride osteosclerosis from drinking water. Radiology 40: 474, 1943.

(42) KEMP, F. H.: Fluorine in human nutrition. Radiological investigations. Proc. Nutrition Soc. 1: 210, 1944.

(43) SHORTT, H. E., MCROBERT, G. R., BARNARD, T. W., AND NAYAR, A. S. M.: Endemic fluorosis in the Madras Presidency. Indian J. M. Res. 25: 553, 1937.

(44) PANDIT, C. G., RAGHAVACHARI, T. N. S., RAO, D. S., AND KRISHNAMURTI, V.: Endemic fluorosis in South India. A study of the factors involved in the production of mottled enamel in children and severe bone manifestations in adults. Indian J. M. Res. 28: 533, 1940.

(45) OCKERSE, T.: Endemic fluorosis in the Pretoria District. South African M. J. 15: 261, 1941.

(46) WILKIE, J.: Two cases of fluorine osteosclerosis. Brit. J. Radiol. 13: 213, 1940.

(47) ROHOLM, K.: Fluorine Intoxication. A Clinical-Hygienic Study, with a Review of the Literature and Some Experimental Investigations. Copenhagen, Denmark: Nyt Nordisk Forlag, 1937.

(48) MURRAY, M. M.: Industrial fluorosis. Brit. M. Bull. 7: 87, 1950.

(49) MACHLE, W., AND EVANS, E. E.: Exposure to fluorine in industry. J. Indust. Hyg. & Toxicol. 22: 213, 1940.

(50) HOUGH, J. W., BYERS, D. H., FORNEY, V. J., BRINTON, H. P., KEENAN, R. G., RALLS, R. P., AND PAULUS, H. J.: Health of Workers Exposed to Sodium Fluoride at Open Hearth Furnaces. U. S. Public Health Bull. No. 299, 1948.

(51) LARGENT, E. J., BOVARD, P. G., AND HEYROTH, F. F.: Roentgenographic changes and urinary fluoride excretion among workmen engaged in the manufacture of inorganic fluorides. Am. J. Roentgenol. 65: 42, 1951.

(52) AGATE, J. N., BELL, G. H., BODDIE, G. F., BOWLER, R. G., BUCKELL, M., CHEESEMAN, E. A., DOUGLAS, T. H. J., DRUETT, H. A., GARRAD, J., HUNTER, D., PERRY, K. M. A., RICHARDSON, J. D., AND WEIR, J. B. DEV.: Industrial Fluorosis. A Study of the Hazard to Man and Animals near Fort William, Scotland. A Report to the Fluorosis Committee. Medical Research Council Memorandum No. 22. London: H. M. Stationery Office, 1949.

(53) PETERS, J. H.: Therapy of acute fluoride poisoning. Am. J. M. Sc. 216: 278, 1948.

New Danish Freezing Process

Newsweek recently reported that in Copenhagen, scientists have developed a new, superfast freezing process, whereby unpackaged food is dipped in a solution of distilled water, glycerine, and ethyl alcohol at a temperature of −20°F. The food is frozen solid and sent by overhead conveyor to a tunnel where blasts of cold air reduce the temperature still further, while blowing away all traces of the freezing solution.

The method produces superior frozen food, it is claimed, because the food is subjected to low temperatures only about half as long as in conventional quick-freezing methods, thus allowing less opportunity for large ice crystals to form. With this method, the scientists report no need to eviscerate poultry, blanch vegetables, or add sugar to fruits. Berries come out firm, and grapes do not burst. Also, whole grapefruit, melons, and tomatoes can be successfully frozen, and such foods as herring, strawberries, cauliflower, oranges, and chicken have been frozen in the same tank without exchanging flavors.

Food Intakes of Obese and Non-Obese Women[1]

RACHEL BEAUDOIN, Sc.D. in Hyg.,[2] and J. MAYER, Ph.D., D.Sc.

Department of Nutrition, Harvard School of Public Health, Boston

ALTHOUGH it is well established that obesity follows the habitual ingestion of a caloric intake in excess of energy expenditures (1–3), no reliable information on the selection of nutrients or the meal pattern of obese individuals as compared to similar groups of non-obese subjects is available. This paucity of established facts has, however, been masked by an abundance of unsubstantiated statements on the idiosyncrasies of excessive eating. These generalizations were usually given as corollaries to favorite views on the origin of obesity whether metabolic or psychogenic or on the etiologic influence of socio-economic and cultural factors.

Representative opinions expressed in the literature are as follows: obese individuals exhibit an unusually high intake of carbohydrate (4–11), of fat or fat-rich food (12–14), or normal intakes accompanied by decreased activity (15–18). As far as an eating pattern is concerned, it has been said that obese individuals eat more often (12–19), that they often eat enormous amounts of foods at one sitting (20), that a larger proportion of their caloric intake is derived from evening meals or snacks (21, 22), or that they consume most of their food at one meal (23).

Some of the authors have explained the lack of evidence supporting these opinions by the difficulties encountered in trying to obtain reliable dietary information from obese individuals (5, 6, 21, 23–25).

It seems, therefore, that underlying this paucity of information and diversity of unsupported generalizations is a problem in methodology, namely: what is the relative degree of reliability of methods of collection of dietary data when applied to the study of the food intake and habits of obese individuals? Only when information is available on this point will it become possible to proceed further and compare the caloric intakes, selection of nutrients, and meal patterns of the obese and non-obese.

PLAN

In addition to this comparison of validity of methods, it was attempted to give a factual basis for answering the following three specific questions:

(a) What is the caloric intake of obese women compared to that of subjects of normal weight?

(b) Is the distribution of fat, protein, and carbohydrate in the diet of the obese different from that of normal subjects?

(c) Are the relative size and the frequency of meals different in obese and in subjects of normal weight?

The problem having thus been defined as being, first, one of methodology, a number of approaches were used for collecting dietary data. These approaches could be grouped under the general headings of (a) methods of self-recording of food intake (one-day and three-day records) and (b) interview methods (clinic dietary history and research dietary history).

Some of these methods had previously been used on populations for which height-weight records existed.[3] Therefore, it was felt that time could be gained and further use made of valuable information if the crude dietary data corresponding to underweight, normal, and overweight individuals were included in this study provided they were recalculated and

[1] Supported in part by grants-in-aid from the National Institute of Arthritis and Metabolism, National Institutes of Health, Public Health Service; Nutrition Foundation, Inc., Chemistry Scholarship Fund, National Biscuit Company, and J. M. Kaplan Fund, Inc., all of New York City; and The McCallum Foundation, New Brunswick, New Jersey.

The assistance of Jeanne Macmillan in several phases of the preparation of this paper is gratefully acknowledged.

Received for publication August 15, 1952.

[2] Now at the Institut de dietetique et de nutrition, Université de Montreal, Montreal, Canada.

[3] This study was made possible by the kindness and generosity of Charlotte Young, Ph.D., School of Nutrition, Cornell University, Ithaca, New York; Bertha S. Burke, Department of Maternal and Child Health, Harvard School of Public Health; and Virginia Heggie, Nutrition Clinic, Peter Bent Brigham Hospital, Boston, who allowed their completed record forms to be used in several of the dietary evaluations that form the basis of comparisons presented in this paper. These workers are not, however, to be held responsible for any miscalculation or misinterpretation of their data committed by the authors.

analyzed by a common method. Only adult women under the age of sixty years were considered.

Several investigators kindly made available the original food records and answers to interviews. In addition, the food records kept by obese and control subjects who participated in metabolic studies (26) were used. All data were calculated by the short method of dietary analysis of Leichsenring and Wilson (27). Supplementary values, as needed, were taken from Bowes and Church (28).

SAMPLES AND METHODS OF COLLECTION OF DATA

One-Day Food Record

One hundred and sixty-two one-day records were obtained (1) as part of the nutrition survey carried out in Groton Township, New York (29). They represented 58 control women of normal weight, 59 overweight women, and 45 underweight subjects (30). The records had been collected one day at midweek in the fall. The individual forms used were adapted from those of the U. S. Public Health Service (31). Individual instructions were given before the filling out of the forms, and they were checked when collected.

Three-Day Food Record

Twenty-four three-day food records chosen from Monday to Thursday were kept by twelve overweight women and twelve women of normal weight, each overweight woman being matched for height and age by a control. This study was carried out in the fall. These women were volunteers participating in a metabolic study in the Department of Nutrition, Harvard School of Public Health. They were nondiabetic, ranging in age from twenty-five to fifty-five years. Half were in the active phase of obesity (26); the other half were in the static phase with several losing weight. The method of collecting dietary data was essentially similar to that used in the one-day records (31). Each woman was given a form and instructions on how to use it. The completed questionnaire was discussed with the subject for omissions or inaccuracies.

Clinic Dietary History

Dietary histories were obtained from the Nutrition Clinic of the Peter Bent Brigham Hospital, Boston, and the Department of Nutrition, Harvard School of Public Health. Those selected for study represented 30 consecutive non-diabetic obese adult women under the age of sixty who were referred to the Clinic during the period from June 1951 to June 1952. This interview method (32) is designed to serve as a basis for corrective clinical use.

Research Dietary History

Fifty-three research dietary histories (33) were obtained from the Department of Maternal and Child Health, Harvard School of Public Health and the Boston Lying-In Hospital. They covered the food intake of 20 women of normal weight and 30 obese women, prior to pregnancy. These women ranged in age from seventeen to forty-two years.

CALORIC INTAKE BY VARIOUS METHODS

Table 1 shows that as far as the women of normal weight are concerned, strikingly similar average caloric intakes are achieved by three of the methods of collecting data. (The clinic dietary history method was not applied to a group of normal weight.) The one-day food record, the three-day record, and the research dietary history all agree within a few calories of the figure of 2200 calories for the daily intake of the women of normal weight. This is in perfect agreement with the requirement for women of the same average age as calculated by the FAO Committee on Calorie Requirements (34). This agreement is actually better than would normally be expected in view of published reports on such comparisons (35, 36).

For the obese groups, the values for caloric intake vary with the method: results are highest by the research dietary history and lowest by the record

TABLE 1

Contribution of protein, fat, and carbohydrate to the average caloric intake of overweight, normal weight, and underweight women

METHOD OF COLLECTING DATA	TYPE OF SUBJECT	NUMBER OF SUBJECTS	AVERAGE DAILY CALORIC INTAKE	CONTRIBUTION OF		
				Protein	Fat	Carbohydrate
				%	%	%
1-day food record	overweight	59	1964	14.46	38.64	47.25
	normal	58	2198	13.21	37.38	49.55
	underweight	45	2099	12.78	39.78	48.94
3-day food record	overweight	12	1591	16.36	38.64	45.12
	normal	12	2196	13.97	41.46	46.05
Clinic dietary history	overweight	30	2524	14.39	46.08	39.50
Research dietary history	overweight	33	2829	12.79	37.56	49.79
	normal	20	2201	13.66	36.82	49.18

TABLE 2

Statistical significance of the difference in average caloric intake of overweight women and those of normal weight

METHOD OF COLLECTING DATA	MEAN DAILY CALORIES		MEAN DIFFERENCE	CRITICAL RATIO	PROBABILITY
	Overweight women	Women of normal weight			
1-day dietary record	1964±594	2198±587	234	2.1	0.036*
Research dietary history	2829±674	2201±475	628	3.9	<0.01**

* Significant at the 0.05% level.

** Significant at the 0.01% level.

methods with the clinic dietary history occupying an intermediary position.

It is interesting to note (Table 2) that, while by the research dietary history method it is found that the overweight women eat significantly more than their controls, the one-day food record method gives intakes for the overweight women which are lower than those obtained for the normal weight or even underweight women. Analysis of the data shows that differences in age distribution or in weight cannot account for the different results obtained by the two methods. In the case of the three-day food record, the lower value obtained from the obese may be accounted for in part by the fact that an unusually high proportion of the obese patients were losing weight.

It appears, therefore, that, as far as groups of women of normal weight are concerned, the one-day food record will give the same averages as the more time-consuming and difficult research dietary history. On the other hand, the value of the one-day record may be vitiated as far as the obese groups are concerned by one or both of the following factors: (a) inability of the obese women to disclose their true intakes without prodding and (b) influence of the food record during the one day studied.

The research dietary history, in which the individual patient is helped to describe his intake by a skilled interviewer and where a long period already elapsed is covered, avoids both difficulties. The fact that the size of the standard deviation is increased by prolonging the period of study, rather than reduced as it is for normal subjects (37, 38), demonstrates the greater variability of daily caloric intakes in overweight women than in normal subjects.

DISTRIBUTION OF NUTRIENTS

Table 1 shows good agreement between the various methods as far as proportion of calories derived from fat, protein, and carbohydrate is concerned. Furthermore, no significant difference was found between obese and non-obese subjects by any method, including the research dietary history. This finding contradicts the two prevalent, but unsupported, views found in the literature and cited above to the effect that obese individuals consume more carbohydrate or more fat than subjects of normal weight. It is worth noting that all subjects, whether obese or not, derived a greater proportion of their calories from fat than the 20 to 25 per cent usually suggested for adults (39). Similar findings have been reported (40, 41) previously.

Observations on free selection of nutrients by genetically obese mice (42) and hypothalamic obese rats (43) and disclosure of metabolic differences between active and static phase of obesity in experimental animals (44) and man (26) suggest the possibility that further analysis, taking into account the phase of obesity, might be more revealing in regard to possible differences in food choices according to the phase of obesity considered.

MEALS AND SNACKS

It has been seen that close agreement is obtained by the various methods of collection of dietary information as far as the caloric intake of women of normal weight is concerned. This figure is also in agreement with predicted values (34). Therefore, it appears reasonable to assume that the data on the percentage of subjects taking meals and snacks and the caloric content of these meals and snacks are also valid. According to the results of the one-day record survey (Table 3), it is readily seen that all of the non-obese women interviewed ate breakfast, lunch, and dinner and that a high proportion of them took sizable snacks. The three-day record method, because of the slant of the composition of the sample (women working outside of home rather than a cross section of the population) gives the same total calories for normal women but a slightly different distribution: the proportion and size of the daytime snacks and the size of lunch were decreased, while evening meals were larger. The appraisal of the frequency and size of meals and snacks of overweight women by the record method is open to question, since the total caloric intake as disclosed by these methods appears to be too low.

If the results of the one-day record method are compared with those of the clinic dietary history, it appears that the obese subjects have a tendency to minimize the frequency and size of the snacks taken after lunch throughout the rest of the day as well as the size of dinner. This underreporting of the after-

TABLE 3

Meal and snack pattern of eating of normal and overweight women

TIME OF EATING	WOMEN OF NORMAL WEIGHT		OVERWEIGHT WOMEN	
	Per cent	Caloric intake	Per cent	Caloric intake
One-Day Food Record				
Breakfast	100	413±211	98.3	362±166
Morning snack	44.8	138± 76	33.3	235±164
Noon meal	100	815±342	100	645±293
Afternoon snack	48.3	170±141	33.3	153±126
Evening meal	100	729±239	100	786±283
Evening snack	43.1	230±181	31.6	184±188
Research Dietary History				
Breakfast			100	395±187
Morning snack			33.6	237±188
Noon meal			100	677±204
Afternoon snack			40	344±321
Evening meal			100	932±249
Evening snack			80	367±210

noon and evening caloric intake appears to be the essential reason for the low total found by the record methods.

COMPARISON OF METHODS ON THE SAME GROUP OF OBESE WOMEN

To improve the validity of methodological comparisons, both the one-day record method (applied under conditions as similar as possible to those understood to be prevailing during the Groton Survey) and the research dietary history method (under its normal conditions of application by the Maternal and Child Health Department, Harvard School of Public Health) were used on the same group of subjects. This group, composed of a dozen obese women who had been pregnant for one to two months, was found to be almost equally divided into three subgroups. One subgroup was made up of women who had been gaining weight appreciably during the recent past (one year); one was composed of women whose weight had been stabilized for at least one year, and the third comprised women who had been successfully reducing during the preceding year.

Although the total number of subjects considered in this comparison is, admittedly, not large, results were sufficiently definite to be worth mentioning. In the case of the women actively gaining weight, the research dietary history method gives intakes 500 to 1200 calories per day higher than the one-day food record. For the women who had been maintaining their weight for an extended period, research dietary intakes are higher than the one-day intake records by a margin ranging from 0 to 400 calories per day, with an average of approximately 300 calories. The research dietary histories of the women successfully reducing are somewhat lower than one-day intake totals. In the cases where the research dietary history method seems to uncover additional caloric intake not revealed by the one-day record method, it appears that the afternoon and evening snacks and the evening dinner were the meals consistently underreported.

The composition of the dietary intake in terms of percentage of protein, fat, and carbohydrate was approximately the same by both methods for all women. The only exception was in the case of subjects actively gaining weight where the research dietary method yielded somewhat higher proportions of fat and carbohydrate and a lower proportion of protein than the one-day record method. The number of subjects studied was, however, too small for the differences to be significant.

CONCLUSION

It may be concluded that, while various methods of collection of dietary data will give similar results for women of normal weight, they give very different results when applied to obese women. Generally speaking, the more time and detailed attention given to the obese woman by a skilled interviewer, the greater the total caloric intake will appear to be. It is impossible to say, in the absence of checks by duplicate weighing and analysis of diets, how accurate the results of research dietary interviews are; however, it may be said that the fact that they yield a total caloric intake greater for the obese than for the non-obese women is more consistent with physiologic considerations than the data obtained from food record methods. Obese women appear to have a pattern of eating which is both more variable and less freely disclosed than normal weight subjects. It is, therefore, natural that methods which provide for a systematic exploration of possible factors of resistance may give more reliable information for obese women.

Irrespective of the method used in collecting data and in particular when the method found most reliable is employed, the caloric intake of obese women seems to be derived from fat, carbohydrate, and protein in the same proportion as that of non-obese women. This is in contrast with assumptions found in the literature and previously reviewed.

It is evident that consideration of the food intake and eating pattern of obese women is of interest in the clinical study of individual patients. In view of the high incidence of overweight in the adult American population (45), inadequate estimates of the intake of obese women may substantially decrease rather than increase the over-all average caloric intake. It appears, therefore, that, unless special precautions are applied to the study of the fourth of the adult population which is overweight, any data collected on the caloric intake of populations by the record method is likely to be an underestimate.

SUMMARY

A comparative study of the caloric intake, the composition of the diet, and the meal pattern of obese and non-obese women was reported. The caloric intake and the meal pattern of obese women and control groups were determined by methods of food recording done by the subjects themselves (one-day and three-day food records) and by interviews (clinic dietary history and research dietary history).

The various methods gave equivalent results when applied to women of normal weight. However, when these same methods were applied to obese women, it was found that individual food recording methods gave grossly inadequate mean caloric intakes. The research dietary history yielded results in agreement with physiologic considerations.

In contrast to various unsupported assumptions in published articles on the subject, it was found that the average caloric intake of obese women does not contain a significantly higher proportion of either carbohydrate or fat than does that of their normal weight controls.

The energy content of meals and "snacks," their

frequency and occurrence in the intake pattern of obese women as compared to the controls were described.

Implication of these findings as regards the assessment of caloric intake of population groups was discussed.

REFERENCES

(1) Newburgh, L. H.: Obesity. 1. Energy metabolism. Physiol. Rev. 24: 18, 1944.

(2) Conn, J. W.: Obesity. 2. Etiological aspects. Physiol. Rev. 24: 31, 1944.

(3) Rynearson, E. H., and Gastineau, C. F.: Obesity. Springfield, Ill.: Charles C Thomas, 1949.

(4) Gordon, B., and von Stanley, E.: The use of dextrose in the treatment of obesity; with special reference to the reduction of the body weight without markedly lowering the daily caloric intake. Am. J. M. Sc. 175: 37, 1928.

(5) Fellows, H. H.: Studies of relatively normal obese individuals during and after dietary restriction. Am. J. M. Sc. 181: 301, 1931.

(6) Dunlop, D. M., and Lyon, R. M. M.: A study of 523 cases of obesity. Edinburgh M. J. 38: 561, 1931.

(7) Ogilvie, R. F.: Sugar tolerance in obese subjects. A review of sixty-five cases. Quart. J. Med. 28: 345, 1935.

(8) Godlowski, Z.: Carbohydrate metabolism in obesity. Edinburgh M. J. 53: 574, 1946.

(9) Ray, H. M.: The obese patient. A statistical study and analysis of symptoms, diagnosis and metabolic abnormalities. Sex differences—treatment. Am. J. Digest. Dis. 14: 153, 1947.

(10) Meiklejohn, A. P.: Obesity. Edinburgh M. J. 57: 243, 1950.

(11) Pennington, A. W.: The use of fat in a weight reducing diet. Delaware M. J. 23: 79, 1951.

(12) Bruch, H.: Obesity in childhood and personality development. Am. J. Orthopsychiat. 11: 467, 1941.

(13) Himsworth, H. P.: Mechanism of diabetes mellitus (Goulstonian lecture). Lancet 2: 1, 65, 118, 171, 1939.

(14) Himsworth, H. P.: Diet in the aetiology of human diabetes. Proc. Roy. Soc. Med. 42: 323, 1949.

(15) Greene, J. A.: Clinical study of the etiology of obesity. Ann. Int. Med. 12: 1797, 1939.

(16) Freed, S. C.: Psychic factors in the development and treatment of obesity. J. A. M. A. 133: 369, 1947.

(17) Bruch, H.: Obesity in childhood. 3. Physiologic and psychologic aspects of the food intake of obese children. 4. Energy expenditure of obese children. Am. J. Dis. Child. 59: 739, 1940; 60: 1082, 1940.

(18) Brooks, C.: The hypothalamus and obesity. M. J. Australia 35: 327, 1948.

(19) Green, M. B., and Beckman, M.: Obesity and its management. A survey of 671 patients. M. Rec. 160: 223, 1947.

(20) Rony, H. R.: Obesity and Leanness. Philadelphia: Lea & Febiger, 1940.

(21) Trulson, M., Walsh, E. D., and Caso, E. K.: A study of obese patients in a nutrition clinic. J. Am. Dietet. A. 23: 941, 1947.

(22) Green, M. B., and Beckman, M.: Supplement protein in weight reduction. Am. Pract. & Digest Treat. 1: 1238, 1950.

(23) Richardson, J. S.: The treatment of maternal obesity. Lancet 1: 525, 1952.

(24) Møller, E.: Results of exclusively dietary treatment in 46 cases of obesity. Acta med. scandinav. 74: 341, 1931.

(25) Bruch, H.: Dietary treatment of obesity in childhood. J. Am. Dietet. A. 20: 361, 1944.

(26) Beaudoin, R., VanItallie, T. B., and Mayer, J.: Carbohydrate metabolism in "active" and "static" human obesity. J. Clin. Nutrition, in press.

(27) Leichsenring, J. M., and Wilson, E. D.: Food composition table for short method of dietary analysis (2nd revision). J. Am. Dietet. A. 27: 386, 1951.

(28) Bowes, A. deP., and Church, C. F.: Food Values of Portions Commonly Used. 7th ed. Philadelphia: The author, 1951.

(29) Young, C. M., Williams, H. H., Moore, N. S., Wilhelmy, O., Jr., and Maynard, L. A.: Nutritional status survey, Groton Township, New York. 1. The dietitian and surveys: description of the sample. J. Am. Dietet. A. 26: 771, 1950.

(30) Moore, N. S., and Shaw, C. R.: Nutritional status survey, Groton Township, New York. 5. Physical findings. J. Am. Dietet. A. 27: 94, 1951.

(31) Eads, M. G., and Meredith, A. P.: Nutrition studies. 2. Methods of collecting dietary data. Pub. Health Rep. 63: 777, 1948.

(32) Committee on Nutrition Surveys, Food and Nutrition Board: Nutrition Surveys: Their Techniques and Value. National Research Council Bull. No. 117, May, 1949.

(33) Burke, B. S.: The dietary history as a tool in research. J. Am. Dietet. A. 23: 1041, 1947.

(34) Committee on Caloric Requirements: Calorie Requirements. FAO Nutritional Studies No. 5, June, 1950.

(35) McHenry, E. W., Ferguson, H. P., and Gurland, J.: Sources of error in dietary surveys. Canad. J. Pub. Health 36: 355, 1945.

(36) Young, C. M., Chalmers, F. W., Church, H. N., Clayton, M. M., Tucker, R. E., Werts, A. W., and Foster, W. D.: A comparison of dietary study methods. 1. Dietary history vs. seven-day record. J. Am. Dietet. A. 28: 124, 1952.

(37) Kaser, M. M., Steinkamp, R. C., Robinson, W. D., Patton, E. W., and Youmans, J. B.: A comparison of the calculated and determined calorie and vitamin contents of mixed diets. Am. J. Hyg. 46: 297, 1947.

(38) Yudkin, J.: Dietary surveys: variation in the weekly intake of nutrients. Brit. J. Nutrition 5: 177, 1951.

(39) Food and Nutrition Board: Recommended Dietary Allowances, Revised. National Research Council Rep. & Circ. Series No. 129, October, 1948.

(40) Patterson, J. M., and McHenry, E. W.: Errors in the calculation of the nutritive value of food intake. 1. Comparison of calculated and determined amounts of calories, protein and fat. Canad. J. Pub. Health 32: 362, 1941.

(41) Deuel, H. J., Jr.: Non-caloric functions of fat in the diet. J. Am. Dietet. A. 26: 255, 1950.

(42) Mayer, J., Dickie, M. M., Bates, M. W., and Vitale, J. J.: Free selection of nutrients by hereditarily obese mice. Science 113: 745, 1951.

(43) Soulairac, A.: Le rôle du complexe hypothalamo-hypophysaire dans la régulation centrale de l'appétit glucidique. Compt. rend. Acad. sc. 224: 757, 1947.

(44) Mayer, J., Bates, M. W., and VanItallie, T. B.: Blood sugar and food intake in rats with lesions of the anterior hypothalamus. Metabolism 1: 340, 1952.

(45) Armstrong, D. B., Dublin, L. I., Wheatley, G. M., and Marks, H. H.: Obesity and its relation to health and disease. J. A. M. A. 147: 1007, 1951.

Physiologic Response to Size and Content of Breakfast by Men over 60[1]

W. W. TUTTLE, Ph.D., KATE DAUM, Ph.D., HILDA ROBERTS, and BARBARA RANDALL, Ph.D.

Departments of Physiology and Nutrition, State University of Iowa, Iowa City

BREAKFAST patterns of the population at large vary greatly as to size and content. Although it has been shown in this laboratory (1–3) that breakfast is essential for both mental and physical efficiency during the late morning hours, there is but little data available to establish the size and content of the most efficient breakfast. As far as young women are concerned, no differentiation in tremor magnitude or choice reaction time was observed following the regular consumption of a large or a small breakfast consisting of ordinary breakfast items (4). Similarly, in a study of young men, no differentiation by way of neuromuscular tremor magnitude or choice reaction time was evident following the regular consumption of a basic or a large breakfast consisting of ordinary breakfast items (5). However, in 75 per cent of the young men studied, maximum work output following the large breakfast was significantly less than after the basic breakfast. The study involving young women did not include studies of maximum work output.

To gain information on the relative effectiveness of breakfasts of different content in promoting efficiency during the late morning hours, neuromuscular tremor magnitude, choice reaction time, and maximum work output of ten young men were compared. Tests were made following regular daily consumption of a cereal-and-milk breakfast or a bacon-egg-and-milk breakfast which were essentially alike as to the caloric value and the amount of protein, fat, and carbohydrate (5). No significant differences in any of these physiologic responses were observed following these two breakfasts. To extend the information concerning the relative effectiveness of breakfasts of various types and sizes on efficiency during the late morning hours, the investigation herein reported was carried out.

[1] This work was generously supported by a research grant from Cereal Institute, Inc., Chicago, Illinois. Received for publication October 28, 1952.

The physiologic responses used to compare the effectiveness of breakfasts of different sizes and content were as follows:

(a) Choice reaction time.
(b) Neuromuscular tremor magnitude.
(c) Maximum grip strength.
(d) Grip-strength endurance.
(e) Oxygen required to perform a given amount of work.

THE SUBJECTS

The experimental group involved seven men between the ages of sixty and eighty-four years. Medical examinations showed that although most of them were suffering from some of the common infirmities of men of their age, all were able to act as experimental subjects without jeopardizing their current health status. The group was selected so as to be representative of men of their age as regards physical, mental, economic, and social status. Table 1 shows the height, weight, and age of the subjects. During the investigation, there were no significant changes in the weights of any of the subjects.

The prior eating habits of the subjects varied considerably due to family eating habits of long standing, economic status, and physical defects. To unify the eating habits of the group during the investigation, all ate their meals in the University Hospital dining room under the supervision of the

TABLE 1

Height, weight, and age of subjects

SUBJECT	HEIGHT	WEIGHT	AGE
	cm.	*kg.*	*yr.*
1	170	70.5	78
2	177	92.7	75
3	166	74.1	67
4	164	76.8	84
5	183	88.2	60
6	178	64.1	72
7	166	50.9	79

Department of Nutrition. Thus any influence of economic status in relation to diet was eliminated.

The apparent physical defects were in some instances real, in others imaginary. The real defect concerned with eating was bad teeth in some cases. These were repaired. The imaginary defects were mostly the result of preconceived ideas that certain foods either were harmful or did not agree with the subject. This situation was largely overcome by education and group eating.

In a preliminary experimental period, the subjects were allowed free choice of foods at the cafeteria and in such quantities as they desired. During this period, the dietitian kept careful records of the foods and amount each subject ate. During this preliminary period, the dietitian also had an opportunity to study the likes and dislikes of the group and to observe any peculiarities in eating habits. None of the men selected a diet which the dietitian regarded as best suited to his requirements. Moreover, none was well enough informed to be able to select a proper diet with confidence. One subject accustomed to milk, crackers, and canned baked beans which he warmed in hot water drawn into a wash-bowl, when given a choice during the preliminary period, avoided vegetables and desserts in favor of large quantities of meat, potatoes, and gravy. Those who ate in restaurants evidenced strong preference for fried foods, while those who ate at home followed their respective customary patterns. There seemed to be no positive correlation between economic status and ability to select a properly balanced diet.

As a result of these preliminary observations, it was obvious that the only dietary plan that could be followed successfully was to give each man a diet which met all nutritional requirements, avoiding as far as possible foods which were definitely distasteful to him. As it turned out, few items were ever rejected either from the standpoint of dislike or digestive disturbances. It was also of interest to note that the entire group ate the prescribed food with relish and with disregard for any traditional ideas previously held. Our observations led us to believe that men in this age group, unless they suffer from real physical defects, are eager and capable of eating an adequate diet if they are properly motivated and if it is made available.

TABLE 2

*Sample breakfast menus**

FOOD ITEM	WEIGHT OF SERVING	PROTEIN	APPROXIMATE ENERGY	CARBOHYDRATE	FAT
Basic Cereal-and-Milk Breakfast					
	gm.	*gm.*	*calories*	*gm.*	*gm.*
Fruit (canned grapefruit juice, sweetened)	100	0.4	67	16.1	0.1
Cereal	30	3.0	113	24.3	0.4
Enriched white bread (toasted)	50	4.2	130	26.2	1.0
Sugar	10	—	40	10.0	—
Butter	10	0.1	73	—	8.1
Whole milk	480	16.8	330	23.6	18.8
Total		24.5	753	100.2	28.4
Basic Bacon-Egg-and-Milk Breakfast					
Fruit (canned grapefruit sections in sirup)	100	0.6	81	19.1	0.2
Egg (soft cooked)	50	6.4	79	0.4	5.8
Bacon (broiled)	30	4.2	93	0.5	8.1
Enriched white bread (toasted)	60	5.0	156	31.4	1.2
Grape jam	20	0.1	61	15.0	—
Butter	15	0.1	109	0.1	12.1
Whole milk	240	8.4	165	11.8	9.4
Total		24.8	744	78.3	36.8
Heavy Breakfast					
Fruit (pineapple juice)	150	0.5	81	19.5	0.2
Cereal	30	4.9	105	19.4	2.0
Cream	60	1.6	124	2.4	12.0
Sugar	20	—	80	20.0	—
Enriched white bread (toasted)	50	4.2	130	26.2	1.0
Butter	4	—	29	—	3.2
Whole milk	240	8.4	165	11.8	9.4
Skim milk	90	3.3	33	4.5	0.1
Eggs (2 soft cooked)	100	12.8	158	0.8	11.6
Bacon (broiled)	30	4.2	93	0.5	8.1
Total		39.9	998	105.1	47.6

* Figures for calculation were taken from Bowes and Church (9).

DESIGN OF THE EXPERIMENT

This investigation was designed to study the relative effectiveness of breakfasts of various types and sizes in promoting efficiency in the late morning hours. It included the four-week preliminary period followed by three experimental periods. During the preliminary period, while dietary observations were underway, the subjects came to the laboratory at frequent intervals where they were taught and became accustomed to participating in the experimental procedures. During the experimental periods which followed, the complete diet of the subjects was rigidly controlled, both as to content and quantity. The experimental periods were as follows:

Period 1: Basic cereal-and-milk breakfast, five weeks. (The term "basic" is used here to designate a breakfast which provides one-fourth to one-third the calories and protein required for a 24-hr. period.)

Period 2: Basic bacon-egg-and-milk breakfast, five weeks.

Period 3: Heavy breakfast (40 per cent of protein

and calories required for a 24-hr. period), five weeks.

During each period, subjects came to the laboratory on a regular schedule of bi-weekly appointments to participate in the physiologic testing. All testing was conducted between 10 A.M. and 12 noon. The data for each subject were regularly collected on the same day of the week and within the same hour of the morning. Due to unavoidable circumstances, a complete set of records was not obtained for each subject during each of the experimental periods.

To eliminate or minimize any effects of exercise on some of the tests, the sequence of experimentation was as follows: (a) choice reaction time, (b) neuromuscular tremor magnitude, (c) maximum grip strength and grip-strength endurance, and (d) oxygen used to do a specified amount of work.

TECHNIQUES

Choice reaction time. Reaction time is defined as the interval elapsing between the appearance of a stimulus and the response to it. The stimulus consisted of a bank of five red light bulbs flashed in irregular order. The subjects were instructed to respond only to the flashing of Light 5. This plan was presented to introduce the element of choice and eliminate any learning of the order of light stimuli. A Chronoscope was so arranged that when Light 5 was illuminated, the hand of the time-recorder started, and when the subject responded by pressing a key, the recorder hand stopped. The reaction time was read directly from the Chronoscope dial in milliseconds.

During this test the subject was seated alone in a dark room lighted with a dim red light. Following adaptation to the semi-darkness, the subject performed several practice trials to assure proper adjustment to the apparatus. Each subject performed fifty reactions at each sitting, the mean being used as the choice reaction time for a given day.

Neuromuscular tremor. The method employed for measuring neuromuscular tremor magnitude has been described in detail by Tuttle, Janney, and Wilkinson (6). Briefly, the technique was to have the subject stand with his right arm out-stretched and unsupported so that his index finger lightly touched the activating pin of a Statham strain gauge. The voltage generated by the strain gauge was amplified sufficiently so that it could be recorded by a Brush recorder. The area under a 1-second interval sample of the neuromuscular tremor record was measured by means of a planimeter and expressed in terms of square centimeters. This value was designated as neuromuscular tremor magnitude.

Maximum grip strength and grip-strength endurance. The technique for measuring maximum grip strength and grip-strength endurance has been described by Tuttle, Janney, and Thompson (7). The dynamometer employed takes advantage of a strain gauge technique. It is arranged so that by gripping its handles, a strain gauge is activated. The voltage generated in the gauge is directly proportional to the pressure applied to the dynamometer and is amplified so that it can be recorded on an Esterline-Angus meter.

The maximum grip strength is determined by measuring the greatest height recorded on the meter curve and multiplying this value by a calibration constant which converts the reading into pounds.

Grip-strength endurance is defined as the average strength exerted for a period of 1 min. expressed in pounds. This is obtained by having the subject grip the dynamometer maximally for 1 min. and determining the average pounds maintained during this interval of time.

Oxygen required to perform work. In earlier investigations, cited here as reports from this laboratory, maximum work output as measured by a bicycle ergometer was used as an index to alterations in work capacity. It seemed reasonable to assume that any stress which would alter maximum work output might also alter the amount of oxygen required for a specified amount of work. Due to the ages of the subjects, tests involving strenuous exercise were considered to be inadvisable. The amount of oxygen required to perform a specified amount of relatively light work was used, therefore, as an index to any

TABLE 3

Choice reaction times of seven subjects after three different breakfast regimens

SUBJECT	MEAN REACTION TIME	NUMBER OF TESTINGS	STANDARD DEVIATION
Period 1—Basic Cereal-and-Milk Breakfast			
	milliseconds		
1	240	10	10.1
2	341	10	17.2
3	296	10	14.1
4	260	10	26.4
5	255	10	19.7
6	342	9	12.3
7	303	5	21.7
Period 2—Basic Bacon-Egg-and-Milk Breakfast			
1	239	10	12.6
2	340	9	19.9
3	309	10	11.9
4	274	9	17.2
5	255	9	12.3
6	350	10	31.4
7	322	10	19.6
Period 3—Heavy Breakfast			
1	255	10	17.0
2	330	8	11.0
3	328	10	11.0
4	347	9	27.0
5	332	9	21.0
6	364	9	18.1
7	339	10	17.0

TABLE 4

Significance of differences of choice reaction time presented in Table 3

SUBJECT	PERIOD 1 VS. PERIOD 2		PERIOD 1 VS. PERIOD 3		PERIOD 2 VS. PERIOD 3	
	t value	Significance level	t value	Significance level	t value	Significance level
		%		%		%
1	0.2	85	2.3	4	2.3	4
2	0.1	93	0.5	63	1.3	22
3	2.5	3	5.4	0.1	3.5	0.3
4	1.3	21	6.7	0.1	6.4	0.1
5	—	—	7.8	0.1	9.0	0.1
6	0.7	50	2.8	2	1.1	29
7	1.6	14	3.3	1	2.0	7

change which might occur in work-efficiency as a result of alteration of size or content of breakfast.

The work performed by each subject consisted of walking on a treadmill at the rate of 2 mi. per hour up a 2 per cent grade for 3 min. Obviously, the amount of work performed by individual subjects varied with differences in body weight.

The procedure for determining the amount of oxygen used to perform the work has been described elsewhere (8). Briefly, the method is as follows: The subject breathed oxygen from the drum of a modified Roth-Benedict-type spirometer, and a record was made of the drum drop during a preliminary rest period lasting from 3 to 5 min. during which time the subject stood quietly. Without interrupting the recording, the treadmill was started and the subject began walking and continued to do so for 3 min. At the end of the work period, the treadmill was stopped and the subject again stood quietly until his oxygen debt was paid. By calculating the drum drop for the periods of rest, work, and recovery, and multiplying the results by the spirometer calibration constant, the amount of oxygen used for each period was determined. By subtracting the resting oxygen contained in the combined amounts used during work and recovery, the amount consumed in the performance of the work was determined. The oxygen used for work was corrected to standard temperature and pressure.

THE BREAKFASTS

The breakfasts were planned so that the "basic" breakfasts provided one-fourth the daily protein and caloric requirements of each subject. The number of calories provided was based on the amount of food required to maintain the body weight. The amount of protein depended on the caloric intake of each subject. The number of calories in the breakfasts ranged from 500 to 1000, and the protein in the basic breakfasts, 16.5 to 27 gm. The patterns of the three breakfasts are shown in Table 2.

The total daily intake of the group ranged from 2000 to 4000 calories.

TABLE 5

Neuromuscular tremor magnitude of seven subjects following different breakfast regimens

SUBJECT	MEAN NEUROMUSCULAR TREMOR MAGNITUDE	NUMBER OF TESTINGS	STANDARD DEVIATION
Period 1—Basic Cereal-and-Milk Breakfast			
	sq. cm.		
1	3.30	4*	0.75
2	3.88	4	1.13
3	3.78	4	0.79
4	7.18	4	2.14
5	4.29	4	0.42
6	4.95	4	0.52
7	3.40	4	0.93
Period 2—Basic Bacon-Egg-and-Milk Breakfast			
1	3.65	10	0.40
2	4.62	10	0.91
3	3.95	10	0.77
4	10.63	9	2.86
5	4.95	10	1.25
6	4.18	10	1.62
7	3.14	10	0.27
Period 3—Heavy Breakfast			
1	3.41	10	0.41
2	4.21	8	1.12
3	4.16	10	0.77
4	10.87	10	5.45
5	5.20	9	1.15
6	5.12	8	1.34
7	3.56	10	0.27

* Due to mechanical difficulties only four records of neuromuscular tremor magnitude were obtained during Period 1.

TABLE 6

Significance of differences of neuromuscular tremor magnitude presented in Table 5

SUBJECT	PERIOD 1 VS. PERIOD 2		PERIOD 1 VS. PERIOD 3		PERIOD 2 VS. PERIOD 3	
	t value	Significance level	t value	Significance level	t value	Significance level
		%		%		%
1	1.0	34	0.3	77	1.3	21
2	1.2	26	0.4	70	0.8	44
3	0.3	77	1.0	34	0.2	85
4	2.0	8	3.9	0.3	0.1	93
5	1.0	34	1.3	22	0.4	70
6	0.9	39	0.2	85	1.2	25
7	0.8	44	0.4	70	3.3	0.4

RESULTS

The physiologic responses to each test for the periods studied are presented in terms of the means for each subject. Differences are regarded as significant when, on the basis of the t-test, the level of confidence is 5 per cent or less.

TABLE 7

Maximum grip strength of seven subjects after different breakfast regimens

SUBJECT	MEAN MAXIMUM GRIP STRENGTH	NUMBER OF TESTINGS	STANDARD DEVIATION
Period 1—Basic Cereal-and-Milk Breakfast			
	lb.		
1	80	10	5.8
2	65	10	63
3	36	10	4.6
4	89	10	12.5
5	73	10	3.3
6	69	10	4.0
7	53	10	7.4
Period 2—Basic Bacon-Egg-and-Milk Breakfast			
1	81	10	15.1
2	68	10	10.9
3	37	10	5.5
4	97	9	15.0
5	73	10	3.5
6	64	10	4.1
7	54	10	2.1
Period 3—Heavy Breakfast			
1	79	10	8.0
2	75	10	7.2
3	40	10	6.1
4	90	10	10.2
5	67	10	3.0
6	56	10	3.3
7	60	10	4.2

TABLE 8

Significance of differences of maximum grip strength presented in Table 7

SUBJECT	PERIOD 1 VS. PERIOD 2		PERIOD 1 VS. PERIOD 3		PERIOD 2 VS. PERIOD 3	
	t value	Significance level	t value	Significance level	t value	Significance level
		%		%		%
1	0.2	85	0.3	77	0.4	70
2	0.7	50	3.0	0.8	1.6	13
3	1.3	21	1.6	13	1.1	29
4	1.2	25	0.2	85	1.3	21
5	—	—	4.0	0.1	3.9	0.1
6	2.6	2	7.5	0.1	4.6	0.1
7	0.4	70	2.5	3	3.8	0.2

Choice reaction time. A comparison of the data on choice reaction time, collected during the two basic breakfasts and the heavy breakfast period respectively is shown in Tables 3 and 4. The mean choice reaction time in the late morning hours during the two basic breakfast periods was not significantly different for five of six subjects. For one subject, it was significantly shorter in the late morning hours during the basic cereal-and-milk breakfast period. The data also show that the mean choice reaction time was significantly shorter for six of the seven subjects following the cereal-and-milk breakfast than it was after the heavy breakfast. Comparing the choice reaction time during the basic bacon-egg-and-milk breakfast and the heavy breakfast periods showed that for four of the seven subjects it was shorter during the basic breakfast period.

Thus the choice reaction time of the men during the late morning hours was not appreciably favored by either one of the basic breakfasts. However, the majority of the subjects showed significantly slower choice reaction time following the heavy breakfast than after either of the two basic breakfasts.

Neuromuscular tremor magnitude. A comparison of the magnitude of the neuromuscular tremors during the late morning hours of the three breakfast periods is presented in Tables 5 and 6. The data show that in no instance was there a significant difference in neuromuscular tremor magnitude following the two basic breakfasts. In two instances the mean neuromuscular tremor magnitude was significantly greater during the heavy breakfast period.

It is concluded from these data that neuromuscular tremor magnitude is not altered by consumption of either of the two basic breakfasts. The same conclusion is warranted relative to the size of the breakfast.

Maximum grip strength. The data on measurements of maximum grip strength are shown in Tables 7 and 8. In one case the maximum strength was significantly greater in the late morning hours during the cereal-and-milk breakfast period than when the men ate the basic bacon-egg-and-milk breakfast. Two subjects had a significantly greater maximum strength and two significantly less following the cereal-and-milk breakfast than after the heavy breakfast. The maximum grip strength was significantly greater in two cases and less in one, following the basic bacon-egg-and-milk breakfast than after the heavy breakfast. It was observed that two subjects showed consistently greater maximum grip strength and one consistently less after the basic breakfasts than after the heavy breakfast.

Thus it seems that no differentiation in maximum grip strength during late morning hours was established following the regular consumption of any of the three breakfasts.

Grip-strength endurance. Data on grip-strength endurance in the late morning hours for the three breakfast periods are shown in Tables 9 and 10. In two cases it was greater following the cereal-and-milk breakfast than after the bacon-egg-and-milk breakfast. All subjects showed grip-strength endurance significantly greater following the cereal-and-milk breakfast than after the heavy breakfast. In the case of the bacon-egg-and-milk breakfast and the heavy breakfast, five of seven subjects evidenced superiority in favor of the basic breakfast.

TABLE 9

Grip-strength endurance of seven subjects after different breakfast regimens

SUBJECT	MEAN GRIP-STRENGTH ENDURANCE	NUMBER OF TESTINGS	STANDARD DEVIATION
Period 1—Basic Cereal-and-Milk Breakfast			
	lb.		
1	49	10	4.5
2	34	10	3.0
3	25	10	3.5
4	62	10	7.0
5	47	10	6.7
6	34	10	4.1
7	40	10	4.4
Period 2—Basic Bacon-Egg-and-Milk Breakfast			
1	49	10	8.5
2	33	10	6.8
3	24	9	2.5
4	56	10	7.7
5	44	10	3.0
6	24	10	3.0
7	32	10	4.0
Period 3—Heavy Breakfast			
1	39	10	7.3
2	27	10	4.2
3	20	10	2.8
4	44	10	5.7
5	39	10	4.2
6	22	10	2.2
7	30	10	3.6

It is concluded from these data that there is no clear differentiation in grip-strength endurance resulting from the regular consumption of one rather than the other basic breakfast. However, both the basic breakfasts were more effective in maintaining grip-strength endurance in the late morning hours than the heavy breakfast.

Oxygen required to perform the specified amount of work. Data comparing the oxygen required to perform the specified amount of work following the basic breakfasts and the heavy breakfast are shown in Tables 11 and 12. There was only one subject whose efficiency in oxygen consumption showed any significant difference following the basic breakfasts; in this case the difference was in favor of the bacon-egg-and-milk breakfast. There were no significant differences between the oxygen required to perform work following the basic cereal-and-milk breakfast and the heavy breakfast. In three subects, the oxygen required was significantly less following the basic bacon-egg-and-milk breakfast than after the heavy breakfast.

It is concluded that the basic breakfasts have no advantage, one over the other, as far as the oxygen required to perform a specified amount of work in the late morning hours is concerned. Although no conclusive pattern is established as to the size of breakfasts, where significant differences occurred, they were in favor of the basic breakfasts.

TABLE 10

Significance of differences of grip-strength endurance presented in Table 9

SUBJECT	PERIOD 1 VS. PERIOD 2		PERIOD 1 VS. PERIOD 3		PERIOD 2 VS. PERIOD 3	
	t value	Significance level	t value	Significance level	t value	Significance level
		%		%		%
1	—	—	3.5	0.3	2.7	2
2	0.4	70	4.1	0.1	2.3	4
3	0.7	50	3.4	0.3	3.1	0.7
4	1.7	11	5.8	0.1	3.8	0.2
5	1.2	25	3.0	0.8	2.9	1
6	5.9	0.1	7.7	0.1	1.6	13
7	4.0	0.1	5.3	0.1	1.1	29

SUMMARY AND CONCLUSIONS

Data were collected from a group of seven men between the ages of sixty and eighty-four years on the relative effectiveness of breakfasts of different size and content in promoting physiologic efficiency during the late morning hours. The experiment covered a period of nineteen weeks, including a four-week preliminary period and fifteen weeks during which the diets of the men were rigidly controlled. The breakfasts compared were: (a) a basic cereal-and-milk breakfast, (b) a basic bacon-egg-and-milk breakfast, and (c) a heavy breakfast consisting of ordinary breakfast items. The physiologic responses used for comparison were: (a) choice reaction time, (b) neuromuscular tremor, (c) maximum grip strength, (d) grip-strength endurance, and (e) the amount of oxygen required to perform a specified amount of work.

On the basis of the data collected, the following conclusions are justified:

No differentiation in choice reaction time, neuromuscular tremor magnitude, maximum grip strength, grip-strength endurance, or oxygen required to perform a specified amount of work was established following the regular consumption of a basic cereal-and-milk breakfast or a basic bacon-egg-and-milk breakfast.

Although the great majority of the comparisons showed no differentiation in neuromuscular tremor magnitude, maximum grip strength, or oxygen required to perform the given amount of work following the regular consumption of any of the three breakfasts, a few instances of significant differences were observed. These were almost always in favor of the basic breakfasts. In ten of the fourteen comparisons, the subjects had a significantly shorter choice reaction time following the regular consumption of one or the other of the basic breakfasts than

TABLE 11

Amount of oxygen required by seven subjects to perform a given amount of work following different breakfast regimens

SUBJECT	AMOUNT OF OXYGEN REQUIRED	NUMBER OF TESTINGS	STANDARD DEVIATION
Period 1—Basic Cereal-and-Milk Breakfast			
	ml.		
1	1161	10	180
2	2222	10	212
3	1218	10	285
4	1344	10	135
5	1407	8	234
6	817	10	120
7	525	9	111
Period 2—Basic Bacon-Egg-and-Milk Breakfast			
1	1294	7	267
2	1911	10	337
3	1050	10	368
4	1221	8	147
5	1112	10	341
6	758	10	133
7	533	3	155
Period 3—Heavy Breakfast			
1	1331	8	287
2	2436	8	343
3	1416	8	377
4	1277	6	156
5	1720	8	366
6	924	8	146
7	661	8	151

TABLE 12

Significance of differences of amount of oxygen required to perform a given amount of work as presented in Table 11

SUBJECT	PERIOD 1 VS. PERIOD 2		PERIOD 1 VS. PERIOD 3		PERIOD 2 VS. PERIOD 3	
	t value	Significance level	t value	Significance level	t value	Significance level
		%		%		%
1	1.2	25	1.4	19	0.2	85
2	2.3	4	1.5	16	3.1	0.7
3	1.1	29	1.2	25	2.0	7
4	1.7	11	0.8	44	0.6	56
5	2.0	7	1.9	8	3.4	0.4
6	1.0	34	1.6	14	2.4	3
7	0.1	93	2.0	7	1.1	30

after the regular consumption of the heavy breakfast. Also, in twelve of the fourteen comparisons, the grip-strength endurance was greater following the regular consumption of the basic breakfasts than after the heavy breakfast.

In general, it may be concluded from the physiologic responses observed that a basic cereal-and-milk breakfast and a basic bacon-egg-and-milk breakfast of equal protein content and caloric value are equally effective in promoting mental and physical efficiency in the late morning hours. Also, such basic breakfasts, built around either cereal and milk, or bacon, egg, and milk, are better than a heavy breakfast consisting of ordinary breakfast items for promoting both physical and mental efficiency in the late morning hours.

REFERENCES

(1) TUTTLE, W. W., WILSON, M., AND DAUM, K.: Effect of altered breakfast habits on physiologic response. J. Appl. Physiol. 1: 545, 1949.

(2) TUTTLE, W. W., DAUM, K., MYERS, L., AND MARTIN, C.: Effect of omitting breakfast on the physiologic response of men. J. Am. Dietet. A. 26: 332, 1950.

(3) TUTTLE, W. W., DAUM, K., IMIG, C. J., RANDALL, B., AND SCHUMACHER, M. T.: Effect of omitting breakfast on the physiologic response of the aged. J. Am. Dietet. A. 28: 117, 1952.

(4) DAUM, K., TUTTLE, W. W., MARTIN, C., AND MYERS, L.: Effect of various types of breakfasts on physiologic response. J. Am. Dietet. A. 26: 503, 1950.

(5) TUTTLE, W. W., DAUM, K., IMIG, C. J., MARTIN, C., AND KISGEN, R.: Effects of breakfasts of different size and content on physiologic response of men. J. Am. Dietet. A. 27: 190, 1951.

(6) TUTTLE, W. W., JANNEY, C. D., WILKERSON, D., JR., AND IMIG, C. J.: Effect of exercises of graded intensity on neuromuscular tremor as measured by a strain gauge technique. J. Appl. Physiol. 3: 732, 1951.

(7) TUTTLE, W. W., JANNEY, C. D., AND THOMPSON, C. W.: Relation of maximum grip strength to grip strength endurance. J. Appl. Physiol. 2: 663, 1950.

(8) TUTTLE, W. W., WILSON, M., DAUM, K., AND RHODES, H.: Influence of various levels of thiamine intake on physiologic response. 6. Oxygen consumption. J. Am. Dietet. A. 25: 322, 1949.

(9) BOWES, A. DEP., AND CHURCH, C. F.: Food Values of Portions Commonly Used. 6th ed. Philadelphia: College Offset Press, 1946.

Paper Tableware for Emergency Use

A recent survey of what hospitals are planning to use for emergency equipment for food, drink, and medicine service showed that they would expect in a crisis to rely heavily on paper utensils. The paper cup and container industry, recognizing the essentiality of these items which are also in heavy demand by the armed forces and for feeding industrial workers, has voluntarily set aside 25 million items in twenty presumptive target areas for civil defense.

Since the stockpiles set up by the industry contain all of the types of cups and dishes apt to be wanted, hospitals in areas accessible to these stores should first survey their needs and make them known to the local civil defense director.

Hospitals in areas too far distant to draw on a stockpile should survey the city's wholesalers, jobbers, or retailers of paper goods to get an approximate inventory of supplies regularly available. Arrangements can then be made for quick delivery in an emergency.

Thiamine Metabolism of Women on Controlled Diets

IV. Comparison of the Daily Levels of Thiamine in the Blood and Urine[1]

ELIZABETH COX JOHNSON, RACHEL B. DUBÉ,[2] HELLIN A. LOUHI,[3] HSI-HSUAN YÜ,[4] VALERIE C. WILMOT, and CLARA A. STORVICK, Ph.D.

Nutrition Research Laboratory, School of Home Economics, and Department of Home Economics, Oregon Agricultural Experiment Station, Oregon State College, Corvallis

IN HUMAN subjects, the diagnosis of vitamin deficiency has been stated by Jones (1) to depend on measurement of:

> "(1) the amount of the vitamin or a metabolic product of the vitamin excreted in the urine,
> (2) the level of the vitamin or provitamin in the blood, and
> (3) the concentration of some other blood constituent the level of which is referable to the vitamin supply."

Attempts have been made to assess the adequacy or insufficiency of thiamine nutrition in human subjects using one, two, or sometimes all three of the above measurements. The correlation of one measurement of thiamine nutrition with another has been carried out by various workers with variable results.

Oldham and co-workers (2) found, in thirty-six three-day periods of study of two five-year-old boys, a much poorer correlation between blood thiamine levels and thiamine intake than between urinary excretion of thiamine and intake. Oldham, Davis, and Roberts (3) found that the urinary excretion of thiamine reflected the thiamine intake up to very high intakes. The blood thiamine levels fell during deficient periods and rose when the thiamine intake was increased. However, they did not appear to rise above the preliminary values once an adequate thiamine intake was reached. Friedemann *et al.* (4), studying seven subjects ingesting varying amounts of thiamine, found that the concentration of blood thiamine was not directly related to the rate of thiamine excretion. They suggested that physical state and the quality of the diet as well as mere intake of the vitamin may influence thiamine concentration in the tissues. A number of investigators (5–9), studying both children and adults of varied nutritional status, found that the blood thiamine and the urinary thiamine did not fluctuate together. Burch *et al.* (10) found that a larger portion of the beriberi-symptomatic group than of the non-symptomatic group fell into the low thiamine range in both urinary excretion and blood levels. However, in individual cases the urinary excretion did not always parallel blood levels.

Kirk and Chieffi (11) found no correlation of the fasting blood thiamine with the fasting blood pyruvic acid. Berryman *et al.* (12) found a decrease in 24-hr. urinary thiamine, a decrease in the response to a "load test," and an increase in blood pyruvic acid when the thiamine intake was low. All three tests returned to normal with thiamine supplementation. Horwitt *et al.* (13) found that urinary excretion of thiamine fell within three weeks and blood pyruvate rose within two months from the time a thiamine-depletion diet was instituted. Foltz, Barborka, and Ivy (8) found no change in concentration of thiamine and of pyruvate in the blood but observed a decrease in urinary excretion with lowered thiamine intake. Hawthorne, Wu, and Storvick (14) observed an increase in pyruvic acid and a decrease in blood thiamine and in urinary thiamine when the intake was reduced.

The above discussion further serves to emphasize the statement of Toverud *et al.* (15) that "discussion of thiamine requirement is hampered by investigators' lack of agreement on the correct basis for its determination, whether the need is best estimated on the basis of total calorie intake, or non-fat calorie

[1] Published as Technical Paper No. 736 with the approval of the Director, Oregon Agricultural Experiment Station. Contribution of the Experiment Station Department of Home Economics and the Department of Foods and Nutrition, School of Home Economics, Oregon State College. This study was made possible by grants from the Williams-Waterman Fund of the Research Corporation, New York City. Received for publication May 5, 1952.

[2] Present address: Rivière-du-Loup, Quebec, Canada.

[3] Present address: Ancon, Canal Zone.

[4] Present address: Yenching University, Peiping, China.

intake, or the relative amounts excreted in urine, with or without loading tests; how long an experimental period is required for good evaluation of requirement, and what constitutes valid evidence of inadequacy." It seems to be the general opinion that no one test alone is sufficient to determine thiamine requirements. Consideration of the relationship of one test to another and of the conditions under which the tests are performed is necessary.

The purpose of this paper is to discuss whether a correlation exists between the daily values for total thiamine in whole blood and the daily urinary excretion of thiamine of normal human subjects maintained on controlled diets.

EXPERIMENTAL PROCEDURE

During the past three years, studies have been carried out in this laboratory to determine the daily values of thiamine in whole blood (16) and the daily values of urinary thiamine (17) when normal women were maintained on controlled diets for periods of thirty to fifty-two days. Each year the subjects were maintained on two different levels of thiamine intake: (a) approximately 1000 mcg. total thiamine or 500 mcg. per 1000 calories and (b) approximately 600 mcg. total thiamine or 300 mcg. per 1000 calories.

RESULTS

According to Louhi *et al.* (17), when subjects were ingesting 500 mcg. thiamine per 1000 calories, the mean values for urinary thiamine varied from 100 to 276 mcg. per 24 hr. (Table 1). The authors concluded that the National Research Council recommended allowance of 500 mcg. thiamine per 1000 calories was adequate for six of the eight subjects and borderline for the other two during the experimental period.

When the thiamine intake was reduced to 300 mcg. per 1000 calories, the mean values for urinary thiamine varied from 34 to 109 mcg. per 24 hr. (Table 1). It was concluded that this was not a sufficiently high thiamine intake to meet the needs of all of the experimental subjects.

According to Dubé *et al.* (16) the mean values of blood thiamine of these subjects on an intake of 500 mcg. per 1000 calories varied from 3.3 to 5.4 mcg. per 100 ml. blood (Table 1). Since these levels of blood thiamine were obtained for those subjects who were considered in adequate thiamine nutrition according to the urinary criteria, it seems justified to assume that these subjects exhibited normal blood thiamine values, as determined by a microchemical method.

When the intake of thiamine was reduced to 300 mcg. per 1000 calories, the mean blood thiamine values ranged from 2.8 to 4.6 mcg. per 100 ml. blood. An over-all reduction in the values for blood thiamine was evident, but this varied from subject to subject (Table 1).

When the daily values for urinary thiamine were compared with those for blood thiamine and treated statistically, no significant relationship was found, regardless of whether the values for blood thiamine were expressed in terms of micrograms per 100 ml. whole blood or micrograms per 100 ml. packed cells.[5] The multiple correlation coefficient of urinary excretion of thiamine and whole blood thiamine and thiamine in packed cells was 0.0910 for 416 degrees of freedom.

TABLE 1

Comparison of blood thiamine levels and the urinary excretion of thiamine by subjects receiving two levels of thiamine intake

SUBJECT	DAILY THIAMINE INTAKE	URINARY THIAMINE		BLOOD THIAMINE	
		Range	Mean	Range	Mean
		1949			
	*mcg./1000 calories**	*mcg./24 hr.*	*mcg./24 hr.*	*mcg./100 ml.*	*mcg./100 ml.*
M.L.W.	500	167–276	227	2.1–5.4	3.3
	300	87–132	107	2.6–3.8	3.1
B.L.D.	500	180–286	229	2.4–4.5	3.4
	300	56–121	84	2.3–4.1	3.2
C.A.S.	500	112–165	142	2.3–4.9	3.3
	300	36– 58	48	2.3–4.2	3.0
H.H.Y.	500	204–279	246	2.3–4.6	3.3
	300	83–134	109	2.2–3.8	2.8
		1950			
M.L.W.	500	131–211	163	2.8–5.3	3.8
	300	40– 68	50	2.4–4.6	3.4
K.D.	500	147–232	184	2.7–4.4	3.5
	300	45– 86	57	2.7–4.7	3.6
S.W.W.	500	122–199	159	2.9–4.7	3.7
	300	53– 71	61	3.0–5.1	3.9
		1951			
M.L.W.	500	201–312	268	3.1–5.3	4.1
	300	71– 86	77	3.1–4.2	3.5
H.A.L.	500	84–112	100	3.1–4.6	4.0
	300	25– 55	34	3.1–4.3	3.6
C.A.S.	500	106–181	133	3.4–5.5	4.4
	300	32– 69	47	3.4–4.5	3.8
R.B.D.	500	201–332	276	4.5–6.1	5.4
	300	48– 84	70	3.6–5.8	4.6

* All subjects were receiving 2000 calories daily.

DISCUSSION

Since there is so much variability in results when one test for thiamine nutrition is compared with another, it is worth considering whether these tests should, of necessity, rise and fall together. It is generally assumed that not a great deal of water-soluble vitamin is retained within the body and that tissue concentration does not tend to keep increasing

[5] The mean figures for thiamine content of packed cells are not given in Table 1, but are available in the report by Dubé *et al.* (16).

beyond a certain point. If blood thiamine reflects the tissue stores, one would not expect it to increase above a value indicative of tissue saturation except when physiologically excessive doses are administered. Alexander, Landwehr, and Mitchell (18) have stated: "The capacity of the body for storage of thiamine is limited to two or three times the amount normally present."

The excess thiamine ingested beyond body needs would be expected to be destroyed or excreted. This was demonstrated dramatically by Alexander, Landwehr, and Mitchell (18) when they recovered in the urine up to 90 per cent of the intake of thiamine when the intake was over 70 mg. per day.

It follows, too, that as long as the body is receiving at least a minimal amount of thiamine, it should maintain a relatively constant blood level of this substance. If, however, the intake is inadequate, and, since by definition, the body cannot synthesize the vitamin, it also follows that the blood level will decrease once the body reserves are exhausted. Hence low blood levels are observed coincident with frank beriberi.

For clinical purposes the most informative measurement is that of urinary excretion of thiamine, since it quickly reflects changes in thiamine intake. The level of thiamine in the blood does not exhibit these changes as readily. More information concerning the role of blood thiamine and the value of analyses for blood thiamine might be obtained from a study of the thiamine content of the various blood elements under conditions of varied thiamine intake.

SUMMARY

Statistical correlation of the daily levels of blood thiamine with the urinary excretion of thiamine showed no significant relationship. The physiologic relationship of these two measurements is discussed. It is concluded that for clinical purposes, the most informative and practical measurement of thiamine nutrition is the urinary excretion of thiamine.

REFERENCES

(1) Jones, J. H.: Laboratory diagnosis of human vitamin deficiencies. *In* Vitamin Methods, Vol. 2 (P. György, ed.). New York: Academic Press, Inc., 1951, p. 278.

(2) Oldham, H., Johnston, F., Kleiger, S., and Hedderich-Arismendi, H.: A study of the riboflavin and thiamine requirements of children of preschool age. J. Nutrition 27: 435, 1944.

(3) Oldham, H. G., Davis, M. V., and Roberts, L. J.: Thiamine excretions and blood levels of young women on diets containing varying levels of the B vitamins, with some observations on niacin and pantothenic acid. J. Nutrition 32: 163, 1946.

(4) Friedemann, T. E., Ivy, A. C., Jung, F. T., Sheft, B. B., and Kinney, V. M.: Work at high altitude. 4. Utilization of thiamin and riboflavin at low and high dietary intake; effect of work and rest. Quart. Bull. Northwestern Univ. M. School 23: 177, 1949.

(5) Benson, R. A., Witzberger, C. M., Slobody, L. B., and Lewis, L.: The blood level of vitamin B_1 in healthy children and its relation to the urinary thiamine. J. Pediat. 21: 659, 1942.

(6) Benson, R. A., Witzberger, C. M., and Slobody, L. B.: An evaluation of the blood and urinary thiamine determinations in vitamin B_1 subnutrition. J. Pediat. 23: 437, 1943.

(7) Youmans, J. B., Patton, E. W., and Sutton, W. R.: The clinical significance of blood thiamin (fermentation method) values. Tr. A. Am. Physicians 56: 377, 1941.

(8) Foltz, E. E., Barborka, C. J., and Ivy, A. C.: The level of vitamin B-complex in the diet at which detectable symptoms of deficiency occur in man. Gastroenterology 2: 323, 1944.

(9) Blanchaer, M. C., and Cameron, E.: The relation of thiamine clearance to blood levels in man. J. Nutrition 35: 391, 1948.

(10) Burch, H. B., Salcedo, J., Jr., Carrasco, E. O., Intengan, C. Ll., and Caldwell, A. B.: Nutrition survey and tests in Bataan, Philippines. J. Nutrition 42: 9, 1950.

(11) Kirk, E., and Chieffi, M.: Vitamin studies in middle-aged and old individuals. 3. Thiamine and pyruvic acid blood concentrations. J. Nutrition 38: 353, 1949.

(12) Berryman, G. H., Henderson, C. R., Wheeler, N. C., Cogswell, R. C., Jr., Spinella, J. R., Grundy, W. E., Johnson, H. C., Wood, M. E., Denko, C. W., Friedemann, T. E., Harris, S. C., Ivy, A. C., and Youmans, J. B.: Effects in young men consuming restricted quantities of B-complex vitamins and protein, and changes associated with supplementation. Am. J. Physiol. 148: 618, 1947.

(13) Horwitt, M. K., Liebert, E., Kreisler, O., and Wittman, P.: Investigations of Human Requirements for B-Complex Vitamins. National Research Council Bull. No. 116, June, 1948.

(14) Hawthorne, B. E., Wu, M. L., and Storvick, C. A.: Thiamine metabolism of women on controlled diets. 3. Daily pyruvic acid values of whole blood. In preparation.

(15) Toverud, K. U., Stearns, G., and Macy, I. G.: Maternal Nutrition and Child Health. An Interpretative Review. National Research Council Bull. No. 123, November, 1950.

(16) Dubé, R. B., Johnson, E. C., Yü, H-H., and Storvick, C. A.: Thiamine metabolism of women on controlled diets. 2. Daily blood thiamine values. J. Nutrition 48: 307, 1952.

(17) Louhi, H. A., Yü, H-H., Hawthorne, B. E., and Storvick, C. A.: Thiamine metabolism of women on controlled diets. 1. Daily urinary thiamine excretion and its relation to creatinine excretion. J. Nutrition, 48: 297, 1952.

(18) Alexander, B., Landwehr, G., and Mitchell, F.: Studies of thiamine metabolism in man. 2. Thiamine and pyrimidine excretion with special reference to the relationship between injected and excreted thiamine in normal and abnormal subjects. J. Clin. Investigation 25: 294, 1946.

At the fall meeting of the New York Section, Institute of Food Technologists, a report by Gerald Reed, Rohm & Hass Company, Philadelphia, told of the use of fungal enzymes for bread softening. Although the effect is not as pronounced as with the best emulsifiers, the use of enzymes holds interest because most of the emulsifiers currently used as bread softeners may be omitted from the final bread standards of the Food and Drug Administration.

Current Comment

REPORT ON ADVISORY DEFENSE COMMITTEE FOR WOMEN IN THE ARMED SERVICES[1]

MARY I. BARBER

Home Economics Consultant, Battle Creek, Michigan

In September 1951, a group of fifty women met in Washington, D. C., at the call of General George C. Marshall, then Secretary of Defense, and his assistant in charge of manpower, the Hon. Anna M. Rosenberg. These members of the Defense Advisory Committee for Women in the Armed Services represent fields of interest of special value in studying the needs of women who have answered the call to military service. Some of these fields are: health and nutrition, psychiatry, education, career planning, nursing, housing, recreation, youth groups, labor, theater, and public relations.

The goals set up at the first conference have been integrated into a continuing program. Evaluation at the meeting a year later (September 8 to 12, 1952) showed that constructive progress has been made. One excellent reason for success is that reports have been given personally by the chairmen of subcommittees to the Secretaries of Defense, Army, Air Force, and Navy, and to the heads of both the men's and women's services.

The Committee, briefed by military and civilian chiefs, was convinced of the need for women in the nine branches open to them—the WAC, WAF, WAVES, Marine Corps, Army, Air Force, Navy Nurse Corps, and the Women's Medical Specialist Corps of Army and Air Force (dietitians, occupational and physical therapists). In June a law was passed which provides for commissioning women doctors in the regular establishments of the Army, Navy, and Air Force.

Mrs. Rosenberg has indicated that unless women volunteer for military service, men will have to be recalled for the second or even third time. The Korean situation shows no sign of being brought to an end; hence an over-all recruiting drive is a continuing project. Women are needed to release men from duty in this country for duty overseas.

The hurdles for the recruitment of women were stated to be:

(a) Lack of prestige. (This is rapidly changing.)
(b) Belief that women's place is in the home. (Young girls often get *more* supervision in Service than in the home.)
(c) Objection to regimentation. (There is no more than in summer camps and boarding schools.)
(d) Living conditions in some installations. (One job of the Committee is to inspect, report, and recommend on this subject.)
(e) Career opportunities. (There are greater opportunities in the Services than in many civilian jobs open to high school girls.)
(f) Objections of men in the family and of boy friends.

The advantages are:

(a) An opportunity for continuing education at college level.
(b) Training for a career in one of many fields.
(c) A healthful life.
(d) Opportunity for leadership.
(e) Good pay with medical and dental care.
(f) Challenging work.
(g) Patriotic service.
(h) A chance to share the sacrifices being made by the young men of our country.

The program undertaken by the Advisory Committee is: to create public acceptance of and respect for women in uniform; to improve the quality of enlistees by careful screening; to inspect installations where servicewomen are on duty; and to make constructive recommendations regarding their health and nutrition, education, career training, recreation, and housing.

Visits to Army, Air Force, Navy, and Marine installations have convinced members of the Committee that women officers are fine people, that the young women under them are developing satisfactorily in jobs suited to their abilities. There are few kinds of work which cannot be done by women—and *well* done. Nurses are performing nobly in all parts of the world, and dietitians and occupational and physical therapists are essential for health and morale in the hospitals, both here and abroad.

Tangible recognition of women in the armed services was evidenced by a commemorative stamp issued on September 11 of this year with an impressive ceremony at the White House. Most of the largest, and many of the smaller women's organizations are cooperating with our Committee. Public opinion polls show that attitudes are changing and improving toward women in the armed services. Material has been prepared—leaflets, movies, television, and radio programs—to keep people informed and alert to the subject.

DIETITIANS IN THE SERVICE

You, as members of The American Dietetic Association, are most interested in the positions open

[1] Presented at the 35th Annual Meeting of The American Dietetic Association in Minneapolis, on October 22, 1952.

for dietitians. In line with Department of Defense policy to assist in the recruitment of young women for the civilian professional field, officers of the Army and Air Force Women's Medical Specialist Corps embrace every opportunity to bring the value of entering the field of hospital dietetics to the attention of high school and college students.

The Army and Air Force observe the standards set up by the Association. The Army offers internships with rank of second lieutenant at Brooke and Walter Reed Hospitals. The Air Force Medical Service, as one means of obtaining required strength, offers a program whereby young women already enrolled in approved civilian hospital dietetic internships may—during their internships—be commissioned as second lieutenants in the Air Force Reserve and receive the pay of that grade. This program apparently reaches individuals who might otherwise find it financially impractical to enter dietetics. All details of positions open, salaries, and advantages of military service for dietitians may be obtained by writing the Women's Medical Specialist Corps of the Army and of the Air Force. The Army maintains personnel in its Area offices to supply such information, as well as in Washington. Information on Air Force appointments may be obtained from the Air Force WMSC in Washington.

The Navy, too, has plans for internships to equip dietitians for this branch of the military.

Colleges have the responsibility of bringing military service to the attention of their graduates. The American Dietetic Association has a responsibility both to civilian and military hospitals—that of sharing our well trained women. Our part in military service is to see that the men and women in this country, and the ill and wounded who return, are satisfactorily fed.

Civil and military defense are inseparable. The Defense Advisory Committee is a group of civilians who head up and interpret programs, and advise on policies concerning women in the services. Every member of our Association must do her part either in civil or military defense—the fields so essential to the safety of our country.

Obviously, men are not commissioned in the *Women's* Medical Specialist Corps. However, the Air Force Medical Service is willing to accept applications for commissions in the Medical Service Corps from fully qualified male hospital dietitians and will assign them to duties in their specialty. To be appointed, applicants must have completed one of the approved hospital dietetic internships and must also meet specific requirements as to citizenship, physical standards, and so on. A number of qualified male physical therapists have already been appointed in this manner and are serving in their professional capacity in Air Force hospitals. More encouragement should be given to young men to train for this work.

DISTRICT OF COLUMBIA DIETETIC ASSOCIATION TACKLES CIVIL DEFENSE[1]

DOROTHY L. BOVEE

Director, Food and Nutrition Service, District of Columbia Chapter, American Red Cross, Washington

As members of the District of Columbia Dietetic Association, we became interested in taking part in local civil defense activities in January 1951, when we had a meeting concerning civil defense. Our speakers—one an official of the U. S. Public Health Service, the other a member of Red Cross Disaster Service—inspired us to ask what we as a professional group could do to help in the growing civil defense program. They urged us to take the initiative, to go directly to the civil defense officials and offer our services, and they advised us not to wait for the civil defense officials to ask us to volunteer.

A special committee of our membership was promptly appointed to investigate the civil defense situation in the District of Columbia. The first thing we discovered was that a Food Committee had already been appointed as a subcommittee of the Emergency Health and Welfare Division, and that they were then formulating a three-point plan for mass feeding under disaster conditions. An appointment was made with the Deputy Director of the Emergency Welfare Division, and the services of the local dietetic association were offered. We were invited to participate in the planning and deliberations of the Committee and our place in its organization was established.

THE ADMINISTRATION'S PLAN

The Deputy Director suggested that a dietitian be appointed as a member of and consultant to each of the four major subcommittees of the Division concerned with food and mass feeding activities, which are: Emergency Care and Casualty Aid; Hospital Services; Medical Resources; and Medical Evacuation.

Actually a three-point plan for emergency feeding has been drawn up as follows:

(a) *Mass feeding:* A plan for feeding all able-bodied citizens outside the bombed area, using existing facilities such as restaurants, lunchrooms, and other places equipped for the preparation and serving of food. A simple menu will be served "soup kitchen style" and continued for as many days as necessary. The management and employees of all hotel, restaurant, and college kitchens are enrolled with civil defense for this service.

(b) *Canteen or emergency feeding:* A plan for serving sandwiches, milk, and coffee to workers in and around the perimeter of the bombed area. A mobile

[1] Presented at the 35th Annual Meeting of The American Dietetic Association in Minneapolis, on October 22, 1952.

service will be equipped with supplies and trained Red Cross canteen workers. The service will continue from the supply base to the bombed area until stopped by the Welfare Deputy.

(c) *Hospital feeding:* A plan for feeding hospitalized patients. This service, being of a special type, will be under a separate unit of the Food Committee, and dietitians will be in charge. Regular employees and volunteers will be especially trained and organized to serve as a team in temporary as well as existing hospitals. A male manager appointed by Civil Defense will work with a dietitian at her emergency station on management problems and will serve as a liaison officer between the Hospital Dietary Department and the Food Committee of Civil Defense.

EMERGENCY HOSPITAL FEEDING

This report concerns the work of our representative on the Hospital Services Committee. This Committee's preparedness plan for the operation of the local hospitals in the event of disaster had already been formulated when the appointment of our representative was made. For each of the twenty-two permanent hospitals in the District of Columbia, a secondary hospital site had been established and assigned, and for twelve of these hospitals, a tertiary site had also been designated. This makes a total of thirty-four emergency hospital units for which the Committee must plan.

It was into this organization the dietitians had to integrate their plans for emergency food service in the dietary department, and to relate these feeding plans to the over-all food plan for the community.

Our own Civil Defense Committee, therefore, felt that a basic manual of information outlining the over-all District of Columbia plans for both Hospital Services and emergency feeding would serve as a valuable guide to our membership. With the help and advice of the local chairman of the Food Committee, the chairman of the Hospital Services Committee, and our representative to the Hospital Services Committee, we assembled and prepared material showing how the hospital food service will coordinate with and function in the local civil defense set-up.

The first part of the manual provides: information for the dietitian on the plan of organization of and facilities for hospital care of the local Civil Defense Administration; an outline of the emergency plan for mass feeding and how the hospital dietary department will function under this Committee activity; instructions for the dietitian in planning *before* the emergency and operating *after* the emergency; the organization of dietary teams to cover each unit; instructions for the use of emergency menus to be followed for a week after disaster; the week's menus; and the supply list for foods and equipment needed for a week.

The manual also deals with: the training and management of volunteer help; problems of contamination and sanitation under disaster conditions; precautions against accidents; and finally, personal survival under atomic attack.

After the manual was completed, copies were distributed to all of our hospital dietitians for a critical review and evaluation. At a general meeting of our membership, these civil defense plans for mass feeding were presented and explained. Our dietitians were urged to acquaint their administrators with the work being done and the needs to be met in making the dietary department ready for emergency feeding on an unprecedented scale.

NEED FOR TRAINING

Many of the dietitians report that they have visited the improvised sites to which their hospitals have been assigned and have trained and oriented their own permanent staffs in preparedness for disaster feeding.

In the District of Columbia, no plan has yet been advanced by Civil Defense for the recruitment of volunteers to serve in mass feeding activities in an emergency. That hundreds of volunteers would be desperately needed in hospitals to supplement existing staffs for round-the-clock feeding is known. The most realistic method of preparing volunteers for this specialized feeding activity would seem to be to train them for mass feeding in the hospital environment and under the dietitian.

We have a plan and the willingness to do the job, and we will proceed on the problem of volunteer training when there is machinery for training.

Plate Waste

Plate waste represents a financial as well as a nutritional loss. It also represents a loss in money spent for food and for labor.

Observation is not an effective means of checking plate waste. To get a true picture, plate waste should be collected and weighed. If the amount of such waste is excessive, the causes should be determined. A few of the questions which might be asked are: Was the food attractively served? Was it properly prepared, well seasoned, of good consistency? Were likes and dislikes given consideration? Was the food new to the eater?

Some ways of promoting good acceptance and reducing losses in operational costs and nutritional value would be to: plan menus according to the customers' or patients' preferences, use standardized recipes, and schedule preparation time so that all foods can be served when they are most appetizing.—*Oscar F. Beyer, Production and Marketing Administration, U. S. Department of Agriculture, Chicago.*

Book Reviews

Handbook of Diet Therapy. Rev. ed. Written and compiled by Dorothea Turner for The American Dietetic Association. Chicago: The University of Chicago Press, 1952. Cloth. Pp. 138. Price $3.50.

The newly revised *Handbook* is brought up to date with the application of findings from recent projects of the Diet Therapy Section of The American Dietetic Association.

A practical and simplified program of diet therapy is presented. Each diet has been newly defined and described in terms of a completely revised and up-to-date Glossary of Dietetic Terms prepared by a committee under the chairmanship of Dr. Hazel Hauck. In line with current thinking, therapeutic diets are presented as adaptations of a normal diet, which has been re-evaluated using new material and revised figures on food composition. As in the previous edition, as simplified a form as possible has been used. Although little space is devoted to itemizing numerous diet lists and menus, each daily pattern of food intake is indicated by commonly used key foods in amounts making it possible to note the value of each food and food group. With this information, it becomes a simple matter to adapt and interchange foods to meet various individual requirements, with full awareness of nutritive content.

A new chapter on the diet history, a short method of dietary calculation, and new tables on alcoholic beverages, caloric values, specific energy factors, sodium and potassium content of foods and waters, and the amino acid content of foods have been added.

This *Handbook* will serve the dietitian, clinician, and student group well as a guide and reference.

Let's Have Healthy Children. By Adelle Davis. New York: Harcourt, Brace and Company, 1951. Cloth. Pp. 314. Price $3.

It is regrettable that the author's unquestioned talent for dramatic writing could not be channelled to provide scientific accuracy as well as interesting reading for the prospective mother. Miss Davis presents a foundation of fact so mixed with enthusiasm for special preparations, such as yeast, yogurt, and tiger's milk, that the impression is received that no woman can be well fed during pregnancy or can provide for the well-being of her infant on a budget which limits her buying power to the everyday groceries she can purchase at the chain stores.

This type of writing is pernicious, not only in that the diet prescribed is expensive and, if adhered to rigidly, would certainly occupy most of the woman's time and energy in its preparation and consumption—a situation which is obviously ridiculous and poor psychologic training in food acceptance—but the recommended allowances prescribed by the author are excessive by any well founded standard. There is a growing literature which would suggest that even though immediate symptoms may be lacking or masked by general ill health, the body, even during pregnancy and early growth, can utilize only a certain amount of any nutrient and that continued dietary excess creates extra work for the body in excretion or storage and may even upset delicate biochemical balances. The growing evidence that an unnecessarily luxurious diet may promote early aging of the heart and arteries is an example.

The use of generalizations apart from their original context, thus seeming to give approval by distinguished scientists for the proposed diets, also is to be regretted. It is said that the Bible can be used to prove anything. After reading this book, one is tempted to observe that properly chosen quotations from the scientific medical and nutrition literature can be used to promote any dietary routine. Flashy headlines seldom interpret nutrition accurately or well.

No one will question that pregnancy and early childhood are critical periods requiring careful and specific dietary care for maximum health for the mother and her child, but there is no good evidence that because a little is good, several times more are necessarily better. In fact, the reputable evidence is all against such generalization.—*Margaret A. Ohlson, Ph.D., Head, Department of Foods and Nutrition, Michigan State College, East Lansing.*

Living with Diabetes. By Edward Tolstoi, M.D. New York: Crown Publishers, Inc., 1952. Cloth. Pp. 90. Price $2.

This book is addressed to the "physician, patient, student, and layman."

While some mention is made of the treatment of diabetes before the discovery of insulin, the greater part of the book is devoted to diabetes treated with insulin. Dr. Tolstoi states that his treatment is "based on the fact that insulin is more important than diet, and though well-balanced and adequate diets are essential, weighing of the individual foods is unnecessary. Thus, over the past fifteen years, I have abandoned the strictly regulated and weighed diets, and my patients eat normally while being treated with the new (protamine) insulin. To date that means four thousand patients."

The objectives of the "clinical treatment" are:

"1. Encouragement of the diabetic to eat a self-selected, unweighed, unmeasured diet in a quantity to satisfy his hunger and of a quality to satisfy his tastes. Sweets in reasonable amounts are allowed with the request that overindulgence be avoided as non-diabetics would avoid it.

"2. Elimination of all the symptoms of diabetes with a single daily injection of insulin whether that is protamine alone or a mixture of insulin or any of the other known types.

"3. Maintenance of one's optimum-weight.

"4. Avoidance of acetone (acid substances) in the urine.

"5. Disregard of the sugar in the urine. As a matter of fact, its presence without the usual symptoms of diabetes is desirable, since it protects the patient from overdoses of insulin and consequent insulin reactions."

In the chapter "Is This New Method Safe?" Dr. Tolstoi raises questions and answers them in the light of his own experience and those experimental studies which may apply to this method. However, no distinctions are made in terms of the degree of diabetes, the duration, and added stresses—all of which might be expected to alter the results. Obviously, fifteen years is not sufficient time to provide all the answers. While a certain number of patients may ultimately seem to demonstrate a good outcome in spite of the high blood sugars and uncontrolled diet, it is also quite likely that there will be some "unexplained" failures. In view of Dr. Tolstoi's statement in the early part of his book on the importance of nutrition to the patient with diabetes, it is to be regretted that it will not be possible to correlate the relationship of good nutrition to pathologic findings, since no assessment of food intake is required.

After reading the book one feels that while the lack of

evidence in some areas may be sufficient reason for questioning certain older methods of treatment, the chief value of the book will be in stimulating further trial and investigation of new methods.

Dietitians will find this book a delightfully stimulating nucleus for critical thought.

Modern Jewish Meals. By Mildred Grosberg Bellin. New York: Bloch Publishing Company, 1952. Cloth. Pp. 159. Price $2.

This book is a fresh approach to meal planning for the homemaker who "wishes to serve meals which combine all our sound modern knowledge of nutrition with economy and taste appeal." To the homemaker who adheres to the Kosher food laws, this book should be of particular interest. However, any homemaker will find it of value for new and different recipes.

The introduction lists the basic seven food groups which are generally missing from Jewish cookbooks, since the Kosher food laws do not allow meat and dairy products to be served at the same meal. The menu plans given make the homemaker aware of the importance of including these food groups without forsaking traditional Jewish dishes.

There are thirteen chapters. Included in the first twelve chapters is a complete menu for one week of each month of the year, with recipes for the dishes mentioned. The thirteenth chapter deals with Passover menus. Because many foods are forbidden, the menus and recipes included are an excellent guide to meal planning during this religious period. The recipes are simple to follow, most of which are for servings for five.

The introduction to each chapter is delightfully presented. For instance, the one including menus and recipes for the first month of the year begins, "The month of January is known as the time when good resolutions are made and soon broken. This year you are making and keeping one of the best of all resolutions, to give your family better health through better meals."

This is a well organized book which will serve the homemaker who adheres to the Kosher food laws and will be of interest to other American homemakers who wish to try new dishes. Both will find the menus nutritionally sound.—*Anne Hurevitz, Chief Dietitian, Mount Sinai Hospital, Minneapolis.*

Iodine Content of Foods—Annotated Bibliography, 1825–1951. London: Chilean Iodine Educational Bureau, 1952. Cloth. Pp. 183. Price 21s. net.

This monograph is a compilation of tables giving in great detail the iodine content of common foods used throughout the world. The data are the accumulation of 326 scientific studies by 300 analysts in 26 countries. From 1825 to 1900 all of the studies of food iodine were made in Europe. Around the turn of the century, research in the United States was started. From 1900 to 1924, 9 scientific papers appeared; from 1925 to 1951, 93 papers gave quantitative chemical facts of the iodine content of foods of man and domestic animals. In the United States, as well as in other countries, this research has been correlated with studies of etiology and prevention of endemic goiter.

All of the data are given in clear, understandable tables. On one page is given the average iodine content of some everyday foods, which would suffice for most dietetic needs. Then follow nineteen tables, one for each class of food. For any one food there are many references from different sections of the United States and other countries where the food is produced. Each reference is complete as to location where food was raised, the author, date, and the original article.

Forty years ago, when it was the current practice to omit foods containing iodine from the diet of goiter patients, dietitians would have been more interested in these tables than today. This practice has long since been discontinued, and today, with the accepted use of iodized salt, which provides an average intake of 100 mcg. iodine per day for each individual, these tables are of academic interest only. It is improbable that dietitians will have occasion to use this reference book when planning diets. However, it should be an excellent reference for teaching purposes or for scientific research.—*Helen Mallory, Director of Dietetics, University Hospitals of Cleveland.*

Protect Your Earning Power—Group Insurance for Dietitians

The recent announcement of The American Dietetic Association's plan of income protection has met with fine response by its members anxious to protect themselves against the loss of income due to accident or illness. This program of insurance is a cooperative project of the Association, investigated, sponsored, and designed to provide for its members an unusually fine program of income protection. The strength of the program depends entirely on the members and their participation.

The Association is sponsoring this program to make available to its members dependable disability insurance. This program offers many advantages not available on an individual basis. For example, no house confinement is required to collect full benefits; a policy cannot be cancelled by the company on an individual basis; it cannot be pro-rated if you carry other insurance; it is non-aggregate (a second disability starts a new year for insurance coverage); and the plan provides world-wide coverage, including commercial air travel. Also, the coverage remains in force until the insured retires or reaches the age of seventy. These important advantages are available only through the Association, and at a very substantial saving in premium.

You, more than anyone else, know just how costly it would be for you to be incapacitated by illness for any appreciable length of time. Can *you* be sure that you won't be one of the persons who are accidentally injured every 3 seconds, or one of the 350,000 who are permanently disabled each year? Even at home, accidents temporarily injure 4,305,000 persons and permanently disable 138,435 persons annually. One or more persons in every average family becomes sick or injured each year. For every income producer disabled by accident for eight days or longer, there are twelve disabled by sickness.

This income protection plan of the Association will provide ready cash when disability strikes, and will provide "freedom from worry" that comes when your income is suddenly and unexpectedly interrupted. You should act now, because the charter enrollment period is nearly over! We need an enrollment of 50 per cent if all applicants are to be accepted without regard to prior medical history.

Tempting, Milk-rich, Thrifty — for 50!

From first to fiftieth, Baked Custards made with this Pet Milk quantity recipe have a satin-smoothness and flavor-richness you'll seldom find in custards made with ordinary milk.

That's one reason why so many dietitians who plan and prepare quantity meals choose Pet Evaporated Milk. But there are other reasons, too. Pet Milk is good so many ways — undiluted, just as it comes from the can it can be used in place of cream... or mixed half-and-half with water to make rich whole milk. And it costs less, generally, than any other form of whole milk.

BAKED CUSTARD

FOR 50

INGREDIENTS	AMOUNTS OR WEIGHTS
Eggs	2¼ dozen
Sugar	2¼ cups (20 ozs.)
Salt	¾ teaspoon
Pet Evaporated Milk	5 tall cans
Boiling water	2 quarts plus 1 cup
Vanilla	1 tablespoon
Ground Nutmeg (optional)	1 tablespoon

DIRECTIONS

Beat eggs slightly. Mix with rest of ingredients, except nutmeg. Strain into custard cups. Sprinkle with nutmeg. Set in pan of hot water. Bake in slow oven (325°) 45 minutes, or until knife inserted at outer edge of baked custard comes out clean. Serve warm or cold. Make 50 servings of 4 ounces each.

FREE —"50 Recipes Serving 50" on handy file cards. (Recipes for 6 on reverse side.) Write:

Home Economics Department, PET MILK COMPANY, 1450-A Arcade Building, St. Louis 1, Missouri

Additives . . .

Civil Defense Feeding

The importance of family preparedness to meet an enemy-caused disaster is one point being stressed by the Emergency Feeding Section, Federal Civil Defense Administration. Ellen C. Ruthman, Chief of Emergency Feeding, recommends that families keep a three-day rotating supply of food and liquid in their pantries—food requiring little or no preparation—and that families consider the use of barbecues in their own back yards or the possibility of setting up rows of bricks on which they could cook with solid fuel.

Emergency mass feeding will be necessary when families are unable to provide for themselves due to destruction of facilities and utilities for meal preparation. To have a workable emergency feeding program in any community, responsibility must be fixed in one person, a Chief of Emergency Feeding. This person may be assisted by representatives from all groups which normally feed large numbers of people in developing a detailed plan for feeding the population in case of an enemy attack. The plan should include a survey of existing facilities and locations, a survey of trained personnel, a plan for recruiting and training additional workers to augment trained workers, the number of teams needed for fixed and mobile operations, and specific and alternative locations where teams should report. To keep a plan alive and the interest of workers at high peak, every community should conduct exercises periodically.

Civil defense is a local problem in which every segment of a community should participate. The civil defense organization serves as a coordinating agency for all those groups normally concerned with feeding—the school lunch, the restaurateur, the Red Cross canteen, Salvation Army, dietitians, home economists, and so on.

Fluorescent Lighting

Commenting on the article on "Layout and Labor" (J. Am. Dietet. A. 28: 795, 1952), Ruth E. Preschley, Institution Electric Cooking Consultant, Commonwealth Edison Company, Chicago, points out that voltage may be compared to pressure, whereas watts are the units of power. She says:

"Fluorescent tubes give over twice as much light as incandescent bulbs using the same wattage and would, therefore, appear to be the answer to increasing the amount of light where the wiring of a building does not permit increases in wattage.

"Two problems in the early development of fluorescent lighting which made one reluctant to use it in food service departments have been largely overcome in recent years.

"One of these is flicker or stroboscopic effect. Originally a single fluorescent lamp was controlled by an individual ballast. Noticeable flickering occurred with each alternation of current. In 60-cycle a.c. service, the current actually changes direction 120 times a second. Each time the current changed direction, the original lamp would go out momentarily. In an effort to reduce this visible flickering, two fluorescent lamps were connected to a ballast in such a way that when one of them was at its point of maximum light output, the other was at its minimum. Thus there was never a time when both lamps were out at the same time. The powders now used will retain illumination briefly so the alternations in current are no longer noticeable.

"Another problem is color distortion, which in early installations made food look abnormal and unattractive. Today this can be overcome to a great extent by the use of a newly developed line of tubes which, through the use of powders richer in red, give a color rendition similar to that under incandescent lighting.

"In commercial or institutional kitchens, it is advisable to provide a high level of illumination of at least 50 footcandles of light for the entire kitchen area. This will provide adequate light for any work at any location in the kitchen.

"The original basis of recommending that light come from the left of the worker was for desk work or writing, assuming the person to be right handed. With the source of light, or daylight, at the left, shadows of the person's hands would fall beyond the immediate work area."

Foods in Ecuador

Writing from Quito, Ecuador, Dr. Hazel E. Munsell sheds further light on the preparation of "papaloza" or "chuno" (dehydrated potatoes), described in the June 1952 issue of the JOURNAL (p. 542). She says:

"As far as I can ascertain, this procedure for saving potatoes was introduced in Ecuador from Chile and was used by the Indians in the high paramos. The potatoes are cut in slices, then pressed flat so that they will dry in the sun. The frost treatment may be adventitious, I suspect. The dried slices are boiled for eating. Dr. Campbell's use of the word

GREAT LINE OF THE LEADER!

Shown are only nine of the 62 Garland models! Available in almost any number of different combinations to meet your individual requirements! Fired with gas—the ideal fuel!

BROILERS. Side firing, heavy ceramic radiants, finger tip grid control.

HEAVY DUTY RANGES. Unitherm Fry Top; high edges reduce spillovers.

HEAVY DUTY RANGES. Spectro-Heat hot top (or open top).

RESTAURANT RANGE. Model 194: Two ovens, open top, hot top, griddle sections in any combination desired.

RESTAURANT RANGE. Model 183GG; Two ovens, griddle and broiler, open top or combination hot top.

RESTAURANT RANGE. Model 182: One oven, griddle and broiler, open top or combination hot top sections.

BAKING AND ROASTING OVENS. Extra large capacity in less than 7½ square feet of floor space.

DEEP FAT FRYER. Faster fat temperature recovery, heat distribution.

All Garland units are available in stainless steel or black japan and equipped for use with manufactured, natural or L-P gases. Restaurant ranges also available in Garland Granite Gray.

DINETTE. Compactly designed for small volume cooking and diet kitchens.

GARLAND

DM PRODUCTS

Approved by the American Gas Ass'n Laboratories, Inc.

DETROIT-MICHIGAN STOVE CO., DETROIT 31, MICHIGAN

In Canada, GARLAND-BLODGETT, LTD., 2256 Eglinton Ave. W., TORONTO

'trodden' probably refers to the procedure for pressing the slices thin, but seems unfortunate.

"I was interested to learn that Ecuador is considered by some the home of the potato, although the plant is also native to the highland valleys of Peru, Chile, and Mexico. Potatoes are an important article of diet for all economic groups in Ecuador, and a widely used yellow-fleshed variety seems to have a relatively higher nutritive value than the white-fleshed varieties.

"Ecuador, for so small a country, is unique in the variety of foods that it supplies. Tropical fruits and vegetables of many kinds are found in the lowlands and even in some of the warmer inter-Andean valleys. At high altitudes, and especially in the Province of Tungurahau, the strictly seasonal fruits, such as apples, pears, plums, and peaches, are grown commercially. The quality of the vegetables in the markets of Quito is very good, the prices are reasonable, and some products show very high nutritive values.

"The Instituto Nacional de Nutrición was established in January 1950 through the efforts of Dr. José M. Portilla of Quito and Dr. R. S. Harris of the Massachusetts Institute of Technology, with funds supplied by the Government of Ecuador. Equipment for the Food Analysis Laboratory was purchased with funds supplied by the Kellogg Foundation through the instigation of Dr. Benjamin Horning of that organization. Administration of these funds and the program of technical assistance are under the direction of the Pan American Sanitary Bureau. The beautiful building in which the Instituto is housed is always admired by visitors. It is located on the hill (altitude 9500 ft.!) to the east of Quito with a full view of the beautiful Pichinchas to the west. On clear days one can see from the laboratory windows snow-capped Cotacachi, associated with the well-known village of Otavalo."

Dr. Munsell, who is Director of the Bromatological Laboratory of the Instituto Nacional de Nutrición, went to Ecuador two years ago to help set up the food analysis program.

Cost Control vs. Cost Accounting

"Good quality food is not necessarily luxurious food," stated Cora Kusner, Colorado State Hospital, Pueblo, before the Connecticut Dietetic Association. "The same standards of quality in food production can be applied to the low-cost, the moderate-cost, or the high-cost dietary. Actually it is not so much the food which is eaten that determines the over-all cost as it is food losses and food waste.

"Too many people confuse cost control and cost accounting, or seem to think that accounting is the entire problem. There is a difference. Control is the dietitian's function; accounting belongs to the business office—or in a smaller organization to a clerk working under the dietitian. Cost control begins with purchasing and menu planning, goes into production and labor costs, is involved with portion control and waste, and finally has to consider such factors as patient satisfaction and public relations. Cost accounting is merely the procedure which gives us the information we need to evaluate our work—very necessary, but scarcely the function of the dietitian any more than other forms of bookkeeping and typing.

"This does not mean that the dietitian needs no knowledge of accounting procedures. In a large organization she must be able to supply the business office with needed information accurately and promptly. In a small operation, she may need to decide what must be done, set up a system, train a clerk, and supervise the whole procedure.

"In any case, the dietitian will *use* the information which results from proper accounting procedures in her management of cost control."

Pakistan's Experimental Poultry Farm

A model experimental poultry farm has been set up in Landhi, Pakistan, as the nucleus of an educational program to help Pakistani farmers increase their poultry yields and profits. This project, cosponsored by the Pakistan Ministry of Food and Agriculture and the Expanded Technical Assistance Program of the Food and Agriculture Organization, initiates an international effort to increase protein consumption in Pakistan through improvement in the poultry industry.

The 25-acre farm has about 2000 chickens but is planned for a capacity of 3000 layers. Steps have been taken by the Pakistan government to distribute improved breeds of cocks to the villages at low cost; Rhode Island Reds and White Leghorns have been sent from the United States and Australia to replace the cocks of the native Desi flocks in Pakistan, as the imported breeds will produce more and heavier eggs.

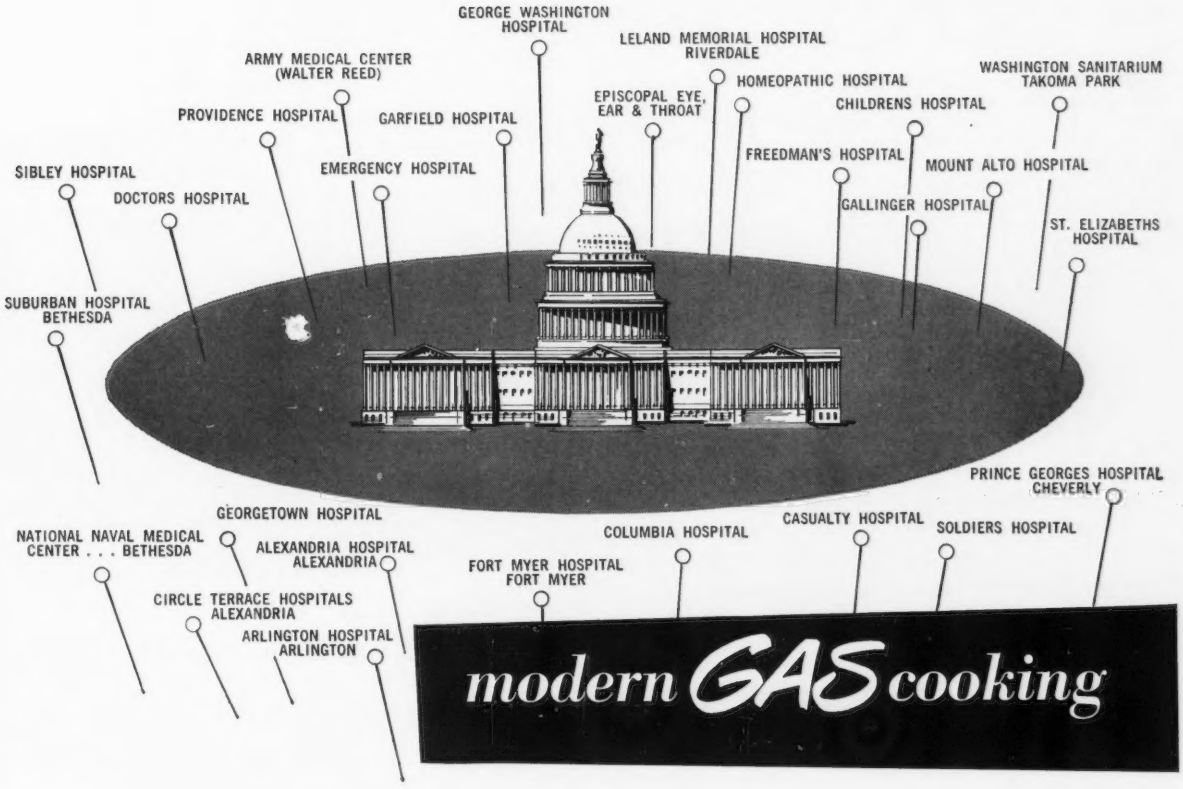
It is estimated that the Pakistani hen lays 50 eggs a year when "a good pullet even under Pakistan conditions should lay at least 120 eggs." The majority of eggs produced in Pakistan weigh only 1¼ oz. compared with the minimum egg weight of 2 oz. in most developed countries.

At present, only four or five eggs per person per year are available in this new country of 80 million people.—a per capital consumption of less than ½ lb. per year as compared with a 48-lb.-per-capita consumption in the United States.

Overall-consumption of animal protein in Pakistan is below minimum standards, and the objective of increasing it is gravely important. One method being used to implement this goal is the poultry improvement program.

Unanimous choice

in Washington, D.C. Hospitals



Long experience satisfies Dietitians, Food Supervisors and Hospital Administrators that GAS has no equal for clean, efficient volume cooking.

It's by choice—not by chance—that every hospital in Washington and its adjacent areas of Maryland and Virginia uses GAS for cooking. Executives of the city's new, most modernly equipped hospitals are in unanimous agreement with those of Washington's older institutions on the many important reasons why GAS has been their selection for food preparation and service.

One of the important reasons is the modern, streamlined compactness of Gas Cooking Equipment which fits into any type of kitchen, large or small.

Another reason is the fast action obtainable with modern Gas Cooking Equipment—high-speed deep-fat frying, broiling by blue flame which seals in natural juices and vitamins, instant on-off heat for top-burner cooking.

But this same efficient Gas fuel, under precise automatic control, permits slow roasting of meats and poultry in constant-temperature ovens so that every pound of raw meat produces the maximum number of generous cooked servings.

Dietitians, food service administrators, and other hospital officials in metropolitan Washington, as well as in other cities coast to coast, will cite many additional vitally important reasons why GAS is best, by any standard of comparison, for every cooking requirement. They're important reasons, too—and your Gas Company or your kitchen equipment specialist will be glad to sum them up quickly for you.

MORE AND MORE THE TREND IS TO GAS FOR COMMERCIAL COOKING

AMERICAN GAS ASSOCIATION
420 LEXINGTON AVENUE, NEW YORK 17, N.Y.

Current Literature

Contributed by Mildred Bonnell and administrative interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Jacqueline Fitzmorris, Dietetic Intern, Veterans Administration Center, Los Angeles; Elizabeth H. Tuft, Wesley Memorial Hospital, Chicago; and the Journal staff

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 19, October, 1952

* Management of diabetic patients during an acute infection. H. J. John.—p. 316.

Diabetes and Acute Infection. A series of eleven patients with diabetes mellitus in which an infection occurred during the time of observation are presented. In two, there was no resulting aggravation of the diabetic state. In the others, a considerable disturbance of carbohydrate metabolism accompanied or followed the infection requiring a pronounced increase of insulin for periods of varying duration. Physicians should be reminded of the importance of a careful check of the diabetic patient in even the slightest infection. This precaution is necessary even when the diabetes is extremely mild, so that the patient may be protected by an increased dosage of insulin.

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 224, October, 1952

* The heritage of hypertension. C. B. Thomas.—p. 367.

Treatment of rheumatic fever with ACTH. I. Smaller doses of ACTH in acute rheumatic fever. J. A. Sheinhopf, G. C. Griffith, R. Morrison, and P. Starr.—p. 390.

Treatment of rheumatic fever with ACTH. II. ACTH by the continuous intravenous drip method. G. C. Griffith, J. A. Sheinhopf, J. D. McNair, and P. Starr.—p. 397.

Vitamin K control of the increased hypoprothrombinemic effect of dicumarol in congestive heart failure. D. F. Covert.—p. 439.

Heritage of Hypertension. Circulatory lability is more prevalent in the offspring of hypertensives and is most often considered a precursor of hypertension. Since percentages of circulatory lability are higher than incidence of parental hypertension, additional factors are indicated for the development of hypertension. A common heritage will develop more often as coronary artery disease in males and hypertension in females, indicating an etiologic relationship. Much is still unknown in the genetic interrelationship of the two diseases. Hypertension usually behaves in a recessive fashion, probably involving a complex genetic pattern.

AMERICAN JOURNAL OF MEDICINE

Vol. 13, October, 1952

* Treatment of obesity. Conference on therapy.—p. 478.

Treatment of Obesity. Overweight is fundamentally due to a disproportion between the caloric intake and the caloric use. There is no rule as to the total number of calories prescribed. Most authorities recommend that they be arranged to induce a weight loss of 1½ to 2 lb. a week and suggest diets varying from 300 to 1600 calories. For the average city dweller whose occupation is sedentary and whose hobbies are moderate, diets varying from 800 to 1200 calories usually work well. It takes about one month to re-educate the appetites of most obese patients, beyond which they cooperate with much less effort. It is good psychology to set a goal for the patient with relation perhaps to waistline, the number of pounds to be lost over a given period, or the size of the clothing. There may be variations in salt and water retention which temporarily hinder weight loss, but the use of diuretics or restriction of salt and water serves no useful function. The only drugs recommended are vitamin supplements and any harmless drug before meals as a placebo.

THE AMERICAN JOURNAL OF NURSING

Vol. 52, November, 1952

* Diet and nutrition during pregnancy. B. S. Burke.—p. 1378.

Diet and Nutrition in Pregnancy. This article gives specific information for nurses in advising pregnant patients about dietary intake. The advantages of proper nutrition, such as reduced infant morbidity and mortality, are listed. Recommended allowances for the latter half of pregnancy, as compared with the normal nonpregnant woman, are presented in tabular form. The importance of additional protein is particularly stressed, and needs for minerals and vitamins are described. A summary of the foods and quantities needed daily for optimum nutrition in pregnancy is given, and a meal plan and sample menu are listed. It is also noted that the woman of normal weight *may* and the underweight woman *will* need to eat more of the basic foods, as well as other, freely-selected foods, in order to reach a desirable weight.

THE AMERICAN JOURNAL OF PSYCHIATRY

Vol. 109, October, 1952

* Treatment in alcoholism. J. A. Smith and W. T. Brown.—p. 279.

Treatment in Alcoholism. Adrenocortical extract was administered to eight chronic alcoholics to determine its effectiveness in decreasing morbidity associated with delirium tremens. Results showed that the extract failed to decrease the morbidity significantly. However, as a means of sedation, it had a favorable result when given to an alcoholic with cirrhosis who did not tolerate barbiturates. Calcium pantothenate was given to nine chronic alcoholics to test its ability to control the tendency to drink by supplying a deficient vitamin. It was given alone and with other members of the B-complex in a daily dosage which started with 30 mg. and was increased to 140 mg. None of the patients showed significant improvement as a result of this treatment.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 42, October, 1952

* Some epidemiologic aspects of brucellosis in the Midwest. M. Feig.—p. 1253.

Brucellosis. Brucellosis is most commonly transmitted from infected animals to man through direct contact with the animals or their tissues, and through the ingestion of raw, unpasteurized dairy products from such animals. However, the need for further epidemiologic studies of the age-sex distribution and methods of transmission of the disease to human beings is pointed out. Sex, age, and seasonal distribution figures from a study of the disease in the Middle West, where it is most prevalent, are given in tables. Data on its incidence, duration, disability, and case fatality do not indicate that it is a public health problem of major proportions.

ANALYTICAL CHEMISTRY

Vol. 24, September, 1952

* Ultraviolet spectrophotometry in detection of food product substitutes. New substitutes. R. J. Morris, R. D. MacPhee, and E. L. Randall.—p. 1396.

Detecting Adulterants in Fats. By measuring conjugated dienoic, trienoic, and tetraenoic systems in fat and oil samples, ultraviolet spectrophotometry now offers a rapid method for detecting substitutions and adulterations in certain fatty food products. Conjugated tetraenoic systems present in butterfats and olive oils are significantly absent in margarine fats and cottonseed oils. Trienoic systems are considerably more prevalent in horse fats than in pork or beef fats.

WHETHER YOU SERVE

50 OR 2000

PERSONS PER MEAL . . .

YOU CAN CUT COSTLY MAN-HOURS WITH

BLAKESLEE

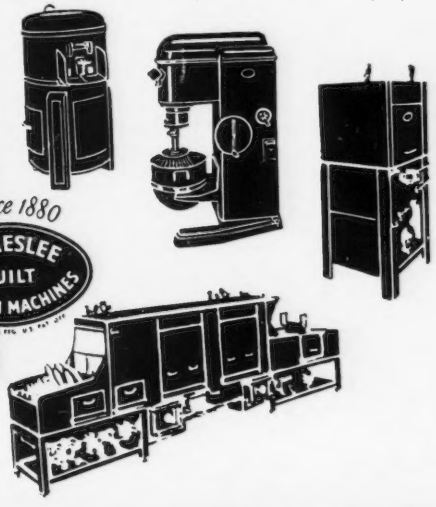
KITCHEN MACHINES

DISHWASHERS | GLASSWASHERS

PEELERS MIXERS AND ACCESSORIES

Since 1880

BLAKESLEE BUILT KITCHEN MACHINES



Make Us Show You How to Cut Costs

Constantly increasing wages mean that labor-saving machines become a more and more important investment. The initial cost of a machine becomes negligible if it can save a sufficient number of man-hours. Many users of Blakeslee Kitchen Machines tell us that they have more than paid for their machine in the savings on labor alone within the first year. Let us show you how Blakeslee-Built equipment can save you countless dollars. Fill in the coupon at right.

MAIL COUPON NOW!

G. S. Blakeslee & Co.
1844 S. 52nd Ave., Chicago 50
Dept. 13–JA.

Please send me the full details about your equipment that will best suit my kitchen requirements. I am sending the facts that will guide you in your answer.

Now using the items checked—

☐ Dishwashing machine ☐ Glasswashing machine ☐ Peeler
☐ Mixer Serve.....persons per meal.
(number)

NAME OF INSTITUTION.....

ADDRESS.....

CITY.....ZONE.....STATE.....

YOUR NAME.....

WRITE NAME OF YOUR DEALER IN LINE BELOW:

G. S. BLAKESLEE & CO.

1844 S. 52nd AVE., CHICAGO 50, ILLINOIS • NEW YORK • TORONTO

ANNALS OF INTERNAL MEDICINE

Vol. 37, October, 1952

* The emotional problems of high blood pressure. E. Weiss, O. S. English, H. K. Fischer, M. Kleinhart, and J. Zatuchni.—p. 677.
* Parenteral B_{12}-folic acid therapy in pernicious anemia. E. H. Sanneman, Jr., and M. F. Beard. —p. 755.

Emotional Problems of Hypertension. A study of 150 unselected patients in a hypertension clinic showed a high incidence of neurosis and accompanying emotional problems. The authors concluded that predisposition to hypertension and personality conflict are parallel disturbances, the one inherited and exhibited in the somatic sphere, the other manifesting itself in the emotional life. There is no evidence that hypertensive vascular disease can be influenced by psychotherapy, but the parallel emotional problems can be alleviated by this treatment.

Parenteral B_{12}-Folic Acid Therapy in Pernicious Anemia. Beard and McIlvaine have reported that certain patients maintained over a long period on vitamin B_{12} showed a decline in their hemograms, and suggested that folic acid was the missing factor. As oral administration was ineffective, eight cases were studied to determine the value of parenteral B_{12}-folic acid therapy. None of these patients showed any improvement. The unfavorable blood picture was thought to be due to general dietary deficiencies and not to an inadequate intake of folic acid.

ARCHIVES OF INTERNAL MEDICINE

Vol. 90, October, 1952

* Recent advances in nutrition and metabolism. G. A. Goldsmith, W. G. Unglaub, and J. Gibbens.—p. 513.

Recent Advances. The authors present an excellent review of the nutrition literature for 1951 with a comprehensive bibliography.

ARCHIVES OF PEDIATRICS

Vol. 69, September, 1952

* Improvement in protein efficiency of a whole wheat cereal breakfast food with the amino acids lysine and threonine and vitamin B_{12}. B. Sure.—p. 359.
* Methionine in lipoid nephrosis. A therapeutic trial. L. S. Goldstein.—p. 366.

Cereal Enrichment. Enrichment of cereal grains promises a more nutritious diet for large portions of the world's population who cannot afford to supplement their diets with a sufficient quantity of the important animal products, and for whom cereals are the basic food. An investigation of the value of the protein enrichment of cereals was made on albino rats. The rations consisted of a processed whole wheat cereal breakfast food plus supplements of vitamin B_{12}, lysine, valine, threonine, and a fish-soluble extract in various combinations. The B_{12} supplement proved of no value in increasing growth, but when combined with the fish-soluble extract or with the three amino acids resulted in remarkable growth.

Methionine in Lipoid Nephrosis. Methionine plays a strategic role in the over-all metabolism, participating in fat, protein, sulfur, and water metabolism. In the case of lipoid nephrosis under discussion, methionine not only eliminated the symptoms but also repaired kidney pathology, reduced hypercholesteremia, replenished plasma protein, and corrected hypoproteinemia, a true clinical cure of a disease having a very bad clinical and statistical prognosis.

BRITISH MEDICAL JOURNAL

No. 4788, October 11, 1952

* Kwashiorkor—I. Nutritional background, history, and distribution. H. C. Trowell and J. N. P. Davies.—p. 796.
* Kwashiorkor—II. Clinical picture, pathology, and diagnosis. H. C. Trowell, J. N. P. Davies, and R. F. A. Dean.—p. 798.

Kwashiorkor. Kwashiorkor appears to be one of the major nutritional diseases. It has been recognized by many African tribes, who have their own names for it. Also, the disease has been described not only in Africa, but also in tropical America and in Asia and may occur in some of the poorer towns of southern Europe. It attacks children at a time when their protein requirements are high. Although African children grow well while fully breast-fed, many fail to gain weight satisfactorily, develop brown hair, and have attacks of diarrhea in the weaning and post-weaning periods. These children are believed to suffer from mild kwashiorkor. They respond to a treatment of milk and plant protein added to their diets.

The clinical picture of severe kwashiorkor is described in the second paper of this series. The transition from the mild condition is usually marked by a period of gastrointestinal upset. Despite edema, which is almost always present in advanced cases, the children are underweight, and bone development may be retarded. A fair amount of subcutaneous fat may be retained. As a late manifestation, a unique dermatosis appears and evolves in a characteristic way. The dermatosis has a different distribution from that of pellagra, but there may be superficial and histologic resemblances. The hair usually becomes reddish or pale. In the absence of any tropical infection, anemia is seldom severe. Apathy and misery are constant features.

FOOD RESEARCH

Vol. 17, September–October, 1952

* Chemical constituents, physical properties, and palatability of frozen pork. A. O. Mackey, A. W. Oliver, and S. C. Fang.—p. 409.
* The essential amino acid content of several vegetables. J. S. Hirsch, A. D. Niles, and A. R. Kemmerer.—p. 442.

Analysis of Frozen Pork. The chemical constituents of the lean portion of pork chops, stored at 0°F. for up to fourteen months, showed little change. P_H values decreased during the first fou months but they remained almost constant thereafter. Moisture was lost from the chops during storage and cooking, although it tended to be conserved during storage by good wrapping paper. Palatability changes were slight, the flavor being a little less desirable after eight months' storage. Fat portions of the meat lost desirability of flavor sooner and more noticeably than the lean portions. Tenderness remained similar to that of fresh pork. The general conclusion is that frozen pork, when properly wrapped and stored, retains its identity for approximately one year.

Amino Acids in Vegetables. The essential amino acid content of fresh and dried blackeyed peas, broccoli heads and stalks, spinach, potatoes, sweet potatoes, pinto beans, and raw and roasted peanuts are reported as the result of a study made to expand the limited data available on the amino acids in vegetables. The content of *l* and *dl* forms of ten amino acids in the vegetables was assayed microbiologically. Calculating amino acid content as per cent of whole protein in egg, it was found that potato protein was low in all ten essential amino acids; broccoli heads and stalks in all but arginine; roasted peanuts in eight amino acids; fresh and dried blackeyed peas and raw peanuts in seven amino acids; and pinto beans in six. Isoleucine, leucine, and methionine are the amino acids which are most often the limiting factors in the vegetables studied.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 150, September 13, 1952

* Protein nutrition in surgery. Editorials and Comments.—p. 141.

Vol. 150, October 25, 1952

* Diet in coronary disease. Queries and Minor Notes.—p. 835.

Nutrition in Surgery. To counteract the negative nitrogen balance following major surgery, high protein and high caloric intake has been recommended and may be supplied either pre- or postoperatively. The question arises whether it is advantageous to maintain a patient in nitrogen balance following an operation. Without further information, both from animal and human studies, the clinical significance of a mild negative nitrogen balance following surgery cannot be finally evaluated.

Diet in Coronary Disease. Confusion on the subject of the proper diet for coronary atherosclerosis is shared by many physicians and by authorities on the subject. Any routine dietary treatment for the condition lacks confirmation until further study can be completed, and then it is unlikely that a uniform dietary routine can ever be advanced. To omit fats altogether may not be necessary for the person who already has coronary heart disease or is a candidate for it. Restriction of the total caloric intake and of weight gain may be of greater consequence. The internal production of cholesterol may prove to be as important as, or more important than, the ingestion of cholesterol.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 198, September, 1952

* Studies of pyruvate and acetate metabolism in the hereditary obesity-diabetes syndrome of mice. K. Guggenheim and J. Mayer.—p. 259.

This free booklet of saccharin recipes gives you faster planning, greater variety for sugar-free diets

- **Over *70 tested recipes* using saccharin**
- **More than *40 pages* of text**
- **Easy to use — complete step-by-step instructions**
- **Covers all kinds of food — salads, pies, breads, puddings, frozen desserts and many more.**

Remember these important dietetic facts about saccharin... this ingredient is a proved, low-cost, non-nutritive sweetener. It has over 400 times the sweetening power of sugar. Its acceptance is based on a background of over 50 years' use as a synthetic sweetener. Next time you are planning sugar-free diets, use saccharin.

MONSANTO

MONSANTO CHEMICAL COMPANY
Organic Chemicals Division
800 North Twelfth Blvd., St. Louis 1, Missouri

Please send me a copy of your Saccharin Recipe booklet.

Name.....*Title*.....

Company.....

Street.....

City.....*Zone*.....*State*.....

SERVING INDUSTRY...WHICH SERVES MANKIND

* Effect of dietary sulfasuxidine on the maintenance of liver ascorbic acid in the rat. M. A. Schwartz and J. N. Williams, Jr.—p. 271.
* The effect of glucose on the amino acids of plasma after total hepatectomy. E. V. Flock, M. A. Block, F. C. Mann, J. H. Grindlay, and J. L. Bollman.—p. 427.
* Effect of vitamin B_{12} on the body composition of rats. C. T. Ling and B. F. Chow.—p. 439.

Pyruvate and Acetate Metabolism. Because observed differences of behavior in a variety of dietary and endocrine conditions between hereditarily obese and non-obese mice must be related to metabolic differences, acetic and pyruvic acids were administered to both types of animals to study the primary metabolic abnormality leading to obesity and diabetes. Acetic acid has been shown to be a precursor of lipides, while pyruvic acid utilization by the diaphragm and the heart muscle of alloxan-diabetic rats has been found to be impaired. The results indicate that obese mice do not catabolize acetate at the same rate as the non-obese animals. The acetate which escapes oxidation finds its way into synthesized fatty acids. Pyruvate oxidation was also depressed in the obese animals though to a lesser extent than in alloxan-diabetic, non-obese mice. The partial block of acetate utilization and resultant increased lipogenesis are considered to represent the primary hereditary biochemical lesion in the syndrome.

Sulfasuxidine and Maintenance of Liver Ascorbic Acid. Sulfasuxidine added to various rations affects the maintenance of ascorbic acid levels in the livers of rats. When the substance was fed to folic acid-deficient rats in a purified ration devoid of folic acid, the liver content of ascorbic acid was lowered markedly. The addition of liver powder, vitamins, or large daily supplements of ascorbic acid to the ration raised liver ascorbic acid values to near those found when purified rations containing no sulfasuxidine were fed. A complete stock ration, with or without sulfasuxidine, produced higher ascorbic acid levels than were found with the purified rations. A strong possibility exists that sulfasuxidine inhibits the bacterial production of one or more substances needed by the rat for the synthesis of ascorbic acid.

Effect of Glucose on Plasma Amino Acids. By varying the amount of glucose administered to dehepatized dogs it is shown that the concentration of free amino acids of plasma is lower when more glucose is available. Paper chromatography was used to get an over-all view of changes occurring in the mixture of amino acids in plasma and urine. Quantitative determinations of total free amino acids and total dialyzable amino acids after acid hydrolysis were made. Glutamine, alanine, and glycine, the three amino acids which make up about 45 per cent of the total quantity of free amino acids of plasma, were also determined. The effect of nephrectomy was investigated in addition. Nephrectomized dogs and nephrectomized-dehepatized dogs were studied in pairs. The kidneys did not seem to play a major role in the regulation of the free amino acid level of the blood either in the presence or in the absence of the liver. The reported observations suggest that glucose or insulin exert a nitrogen-sparing action by increasing the rate of amino acid incorporation in the tissues.

Vitamin B_{12} and Body Composition. It has been suggested that vitamin B_{12} may be involved in the utilization of carbohydrates and their transformation to fat rather than in protein metabolism. To study the theory further, weanling young of vitamin B_{12}-deficient female rats were maintained on diets deficient in the vitamin, some being given crystalline vitamin B_{12} subcutaneously. Administration of the vitamin enhanced the growth rate and increased the food intake. The bodies of animals with vitamin B_{12} deficiency were shown to have low fat, high water, and normal protein contents. Upon chemical analyses, livers of the control and injected groups showed no significant differences in percentage composition of glycogen, nitrogen, or fat. However, in the deficient animals the body weight was smaller relative to the liver weight in comparison with the injected controls. These results appear to substantiate the original hypothesis that there is a relationship between B_{12} and carbohydrate metabolism.

THE JOURNAL OF THE CANADIAN DIETETIC ASSOCIATION

Vol. 14, September, 1952

* Food: the common denominator of mankind. F. Reynolds.—p. 12.
* Cost control. M. E. Terrell.—p. 25.
* Helping others to help themselves. A. R. Kluckner.—p. 31.

Food, the Common Denominator. World food problems are discussed by an FAO worker, who emphasizes that two-thirds of the world's people are perpetually hungry—and that two-thirds of the world's people are engaged in the production of food. However even though incomplete, if present knowledge of improved agricultural methods is applied, it would be possible to feed the world. This possibility was realized at the time FAO was first planned. In the ten years which have elapsed since then, food production has improved. However, not only has population increased over and above that improvement, but the increase in production is occurring in the already well-fed nations. Production *must* take place, the author states, where the people needing the food *are*. Conditions in various countries, particularly India, are described, and the rice breeding program is discussed.

Cost Control. Successful money management has three important phases: obtaining the amount needed, using it well, and measuring the results as a gauge of operations and guide for future planning. A method is given for calculation of selling prices, as well as a plan for purchasing and preparation of food in relation to cost control.

Supervisory Responsibilities. Supervisors' responsibilities include five areas of knowledge and skill: (a) knowledge of work; (b) knowledge of responsibilities; (c) skill in leading; (d) skill in instructing; and (e) skill in improving methods. The supervisor also has an advisory function of helping fellow employees understand the objectives, methods, and the reasons behind his approach to the service and its problems. All of these responsibilities are analyzed, and supervisors are warned against an occupational hazard—believing that they alone are responsible for the success of their work. In developing people who are subordinates, supervisors are helping others to help them.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 31, October, 1952

* A study of the nutritional defect in Wernicke's syndrome. The effect of a purified diet, thiamine, and other vitamins on the clinical manifestations. G. B. Phillips, M. Victor, R. D. Adams, and C. S. Davidson.—p. 859.

Thiamine Defect in Wernicke's Syndrome. Nine chronic alcoholic patients with Wernicke's syndrome were given a purified diet of glucose and minerals. Specific vitamins were added after appropriate intervals of observation. Prior to the administration of thiamine, there was no improvement. More specifically, despite alcohol withdrawal, bed rest, and the addition of other vitamins, the ophthalmoplegia progressed and the ataxia remained unchanged, while the nystagmus decreased only in association with an increase in ocular paralysis. When thiamine only was added, the ophthalmoplegia cleared considerably in from 1¼ to 6 hr.; diminution in nystagmus and ataxia also occurred in some of the patients, but the change was more gradual; there was improvement in mental disturbance, but it was minimal. In view of these observations, there seems to be little doubt that the ophthalmoplegia of Wernicke's syndrome is related to a specific lack of thiamine.

JOURNAL OF HOME ECONOMICS

Vol. 44, November, 1952

* Nutrition program in the Virgin Islands. T. Jones.—p. 704.
* The effect of the method of fat and water incorporation on the average shortness and the uniformity of tenderness of pastry. T. S. Rose, M. E. Dresslar, and K. A. Johnston.—p. 707.
* Traffic lanes and circles in the large kitchen. O. M. Thomas.—p. 716.
Dietitian's food notes from assignment in Peru. G. E. McGuinness.—p. 718.
Fat or lean? Choose your diet. P. Graves.—p. 719.

Nutrition Program. When the Nutrition Division of the Department of Health of the Virgin Islands was established, the work of the nutritionist had to be defined, while the community itself had to be made aware of the benefits obtainable from the new service. Work was begun with studies of existing food practices in the area. The economic status of the inhabitants had to be considered in making recommendations for supplementing habitual diets. Facilities in hospital dietary departments were found to be grossly inadequate, particularly in food preparation and service, dishwashing, storage, and cleaningprocedures. This led to the establish-

Restaurant Mayan
Rockefeller Center, N. Y.

Sexton
Quality Foods

Cafe Louis XIV
Rockefeller Center, N. Y.

High in the sky . . .

over 80 floors from the ground are nested these beautiful dining rooms operated by the Union News Company, combining elegant surroundings with a graceful pattern of service. Hors d'oeuvres have been associated with such service from time immemorial. That is why Sexton reaches to the Seven Seas to procure for a discriminating clientele the most delicious tuna, shrimp, lobster, sardines, anchovies, smoked oysters and caviar.

JOHN SEXTON & CO., CHICAGO. 1953

ment of a consultant service for the food supervisor, nurse, patient, and physician. Indeed, the educational field is one of the important areas of the nutritionist's work, extending to group meetings of teachers, parents, home economics classes, civic organizations, and selected groups having similar food requirements, such as pregnant women. The over-all nutrition program that has developed in the Islands is flexible with modifications occurring to meet changes in community needs and resources.

Pastry Making Methods. Using an electric mixer, pastry made by the water-in-fat emulsion method of whipping boiling water into fat and adding the sifted dry ingredients last was found to be significantly more tender than pastry made by the conventional method of cutting the fat into sifted dry ingredients and tossing the water in last. The water-in-fat method also produced pastry which had greater uniformity of tenderness. Testing of the pastry was done on the Bailey Shortometer. Further investigation is being made of the two methods when mixing is done by hand.

Planning the Institution Kitchen. Unnecessary equipment in the institution kitchen may defeat its original time-saving purpose by becoming a block to traffic lanes and increasing the expenditure of energy to no purpose. Layout to facilitate through-traffic is one phase of good kitchen planning, while another involves having enough of the proper equipment in the proper places. Traffic circles or local traffic routes as well as through-traffic lanes must be considered. These are the routes covered by mobile equipment such as dishes, silver, trays, pots and pans, trucks, food carts, and garbage disposal equipment. Some traffic lanes necessarily cross, but the crossings should be kept at a minimum as a safety and time-saving measure. The location of food and supplies should be determined by the "center of first use." Traffic in the institution kitchen costs labor dollars; the challenge is to reduce the cost.

THE JOURNAL OF NUTRITION

Vol. 47, August, 1952

* Amino acids in the production of blood constituents in rats. W. H. Sebrell, Jr., and E G. McDaniel.—p. 477.

* The biological activity of diethyl riboflavin. J. P. Lambooy and H. V. Aposhian.—p. 539.

Vol. 48, September, 1952

Liver storage of vitamin A by male and female rats. V. H. Booth.—p. 13.

* Ascorbic acid nutriture in the human. I. Tyrosine metabolism and blood levels of ascorbic acid during ascorbic acid depletion and repletion. B. F. Steele, C.-H. Hsu, Z. H. Pierce, and H. H. Williams.—p. 49.

* Production of multiple congenital abnormalities in young by maternal pteroylglutamic acid deficiency during gestation. M. M. Nelson, C. W. Asling, and H. M. Evans.—p. 61.

Influence of dietary fat and carbohydrate on reproduction and lactation in rats. C. E. French, R. H. Ingram, L. K. Knoebel, and R. W. Swift. —p. 91.

Amino Acids and Blood Regeneration. Weanling rats, made anemic by multiple bleedings, were fed rations deficient in a single "essential" amino acid for the purpose of studying the effects on recovery of blood values. When all ten essential amino acids were included in the diet, hematocrit, hemoglobin and red cell counts, and serum protein levels were restored to normal in ten days. Total leukocytes, polymorphonuclear leukocytes, and body weight gains, however, were still below normal at that time. All values except body weight showed their most rapid rate of restoration during the first four days. Omission of histidine and valine resulted in very significant retardation of the rate of regeneration, but lack of arginine, methionine, or tryptophan had little or no effect. With the omission of valine, there appeared to be a reduction in regeneration of polymorphonuclear leukocytes and other white blood cells. Omission of threonine, valine, lysine, or tryptophan had the greatest retarding effects on regeneration of serum protein. The absence of any one amino acid other than arginine produced a loss in body weight. Deficiency of valine, leucine, tryptophan, histidine, isoleucine, or phenylalanine produced tremors between the seventh and tenth days, although no pathology of the sciatic nerve and spinal cord was found.

Activity of Diethyl Riboflavin. Diethyl riboflavin has been found to possess approximately 90 per cent of the activity of riboflavin for the bacterium *Bacillus lactis acidi*. It stimulates the growth of the riboflavin-deficient rat but cannot be considered as being capable of utilization in lieu of riboflavin in the diet of this animal because it does not support life. Diethyl riboflavin has been found to be the most potent riboflavin inhibitor yet described, and the only riboflavin analog possessing vitamin properties for one type of organism and inhibitor properties for another.

Ascorbic Acid Nutrition in the Human. Ten adults were fed a diet containing 7 mg. or less ascorbic acid for seventy-eight days. At intervals, the urinary excretion of "tyrosyl" and reducing compounds and the ascorbic acid level of serum and white cells were determined. A lowering of the serum and white cell ascorbic acid content resulted. After thirty-one days on the deficient diet, the serum ascorbic acid remained at essentially the same low level. White cell ascorbic acid reached its lowest value after the fifty-fourth day. The ascorbic acid concentration in the serum and white cells seemed to be related, and data indicate that with a serum value greater than 0.4 mg. per 100 ml., the white cell ascorbic acid content is 14 mg. per 100 mg. or more. Below these values, the adequacy of the ascorbic acid nutrition might be questioned. Thus it appears that some evaluation of past ascorbic acid nutriture may be made from serum values alone. During the seventy-eight-day period, the only evidence that might be interpreted as indicative of abnormal tyrosine metabolism was increased excretion of reducing substances noted during the last five days, although these values were still within normal ranges.

Multiple Congenital Abnormalities. Under the experimental conditions employed, instituting a deficiency of pteroylglutamic acid in the rat as late as nine days after breeding invariably resulted in death of the fetus (resorption), whereas delaying the deficiency until eleven days after breeding resulted in 95 per cent of the young with multiple congenital abnormalities. These young were characterized by a marked edema and anemia; multiple skeletal abnormalities, such as cleft palate and syndactylism; retarded development of the viscera, especially kidney and lungs; and Morgagnian-type cataracts of the eyes. Instituting the deficiency on the tenth day resulted in approximately 40 per cent of the animals producing litters, consisting of a few markedly abnormal young. In contrast, delaying the deficiency to twelve or thirteen days after breeding resulted in 100 per cent litters, with the young having milder degrees of edema and visceral retardation and practically no skeletal abnormalities. Normal young resulted when the deficiency was not started until fifteen days after breeding.

THE MILBANK MEMORIAL FUND QUARTERLY

Vol. 30, October, 1952

* Annotations. Prevention of eclampsia and pre-eclampsia. D. G. Wiehl.—p. 382.

Eclampsia Control. The disease which appears as eclampsia in late pregnancy can be recognized several months earlier and is probably of metabolic origin. In Women's Hospital, Sydney, Australia, attention to diet, beginning at the start of pregnancy and emphasized between the twentieth and thirtieth weeks, has been responsible for eliminating eclampsia and severe pre-eclampsia.

NUTRITION

Vol. 6, Autumn, 1952

* Dangerous diets. J. A. Black.—p. 12.

* Nutrition and tuberculosis. T. M. Pollock.—p. 15.

* Diet in pregnancy. C. W. Nixon.—p. 21.

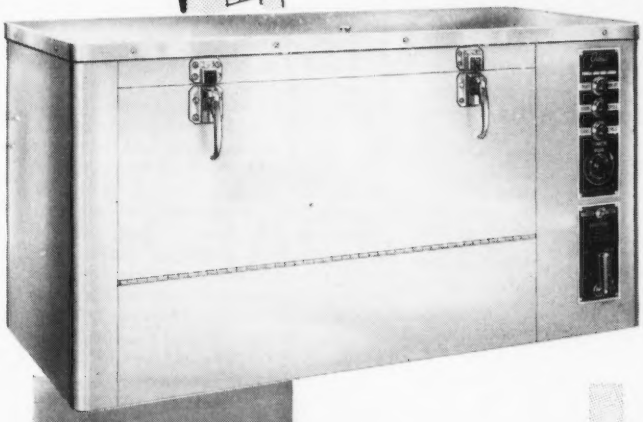
* Recent progress in infant feeding. S. E. Keidan.—p. 33.

* Children who won't eat. H. M. Davis.—p. 37.

Dangerous Diets. The dietitian should be aware of at least some of the dangers inherent in diets ordered by well-meaning physicians. For instance, a high-calorie, high-carbohydrate diet, prescribed for patients with malnutrition, may precipitate a niacin deficiency with resulting glossitis. In cases of cardiac beriberi, huge amounts of food may cause further thiamine depletion with fatal consequences. With celiac disease the carbohydrate intolerance appears to extend to those starch-containing foods derived from wheat flour and rye flour. The upset of acid-base balance in premature infants, caused by a concentrated formula, is another instance of intolerance to acceptable foods, as is the lactose intolerance which gives rise to familial galactosuria.

Nutrition and Tuberculosis. A high protein intake, usually supplemented

SPACE-SAVING is a plus value of *Ideal* TERMINAL STERILIZER



The control panel of the Ideal Terminal Sterilizer gives complete information as to operating procedure. All the nurse does is: 1—Close the drain valve; 2—Insert baskets; 3—Set the timer switch to start position; 4—Turn the master switch on. Thereafter the nurse is completely free to leave the room and if she does not return for hours the formula still is safely kept cool within the sealed interior of the Sterilizer.

You can have a completely equipped formula room in as little as 90 square feet of floor space when you replace your out-dated formula sterilizer with the new Ideal Terminal Sterilizer.

You need only electric current and running water—you don't even need any hot water lines.

Not more than four hours of labor are required to install the Ideal Terminal Sterilizer in operating condition.

Add to these savings of space, materials and money the saving in nurse time. The record shows that when four nurses were required in the formula room prior to installation only one nurse was needed after installation of the Ideal Terminal Sterilizer. Space-wise and budget-wise no hospital can afford to be without the Ideal Terminal Sterilizer.

But the outstanding reason why hospitals all over America are installing this new Ideal unit is because it is the first piece of equipment ever devised that will sterilize infant formula, bottles, nipples and caps automatically and pre-cool the formulae for refrigeration.

Hospitals which average 75% good formula by the infinitely various old methods now average 100% good formula with the Ideal Terminal Sterilizer. Where rubber nipples had a life of one-two weeks in a pressure sterilizer, they last two-three months. No bottles are broken by pressure or heat—no bottles explode. No formula is wasted by overheating.

The average hospital will save the price of an Ideal Terminal Sterilizer every year it is used. Anybody can operate it. Being entirely automatic. nobody needs to watch it. It is absolutely safeguarded against neglect or failure of water or power or of any of its operating parts.

Ideal engineers will gladly help you plan the installation of an Ideal Terminal Sterilizer in whatever space you may want to use. This service is entirely free.

Ideal HOSPITAL EQUIPMENT
Found in Foremost Hospitals

HOSPITAL INDUSTRIES ASSOCIATION HIA

OTHER PRODUCTS
IDEAL FOOD CONVEYORS
HOT PACK HEATERS
BLOOD BANK GUARD
BASSINET BASKET

MADE ONLY BY THE Swartzbaugh MANUFACTURING COMPANY
ESTABLISHED IN 1884
TOLEDO 6, OHIO

Distributed by the Colson Corporation, Elyria, Ohio; The Colson Equipment and Supply Co., Los Angeles, and San Francisco. In Canada: Canadian Fairbanks-Morse Company.

with vitamin A and ascorbic acid, is advocated for the tuberculous patient. The nutritionist, however, must realize that the patient's condition may be too serious to utilize the full diet. Less seriously ill patients may be capricious about food. Dietitians should have more to say in deciding how the general hospital food should be cooked, transported, and presented.

Diet in Pregnancy. In the Chou rituals of 1155 B. C. advice is found on diet for pregnant women. While not the kind of direction being given now in prenatal instruction, it is, nevertheless, of interest because it shows that the importance of diet in this connection has been appreciated for centuries. Latent malnutrition often becomes apparent during pregnancy, causing some of the complications of childbirth. Today it is believed that good nutrition in daily life should be stressed.

Progress in Infant Feeding. With the sanitary improvements in milk production and distribution begun at the end of the nineteenth century, artificial feeding of infants became practicable and popular. Recently emphasis has been laid on the psychologic benefits to both mother and child that derive from breast feeding, but they should not be overemphasized. There is now a tendency to break away from strict feeding schedules in recognition of the infant's individuality. Weaning has been greatly simplified by the variety of pre-cooked cereals and well-prepared canned vegetables that are now available. With increased understanding of good nutrition for infants, the once common vitamin deficiency diseases, rickets and scurvy, are now rare.

Child Feeding Problems. Eating problems of children may begin with the first weeks of life. Over-anxiety of the mother about weight gain and feeding routine is as dangerous at this period as it is later. Adults' lack of knowledge of child-growth, particularly at the periods when the child is beginning to assert independence, can also give trouble. Not recognizing that an emotional upset may temporarily kill the child's desire for food, as it would an adult's, or not being able to distinguish when such upsets occur, can be responsible for feeding difficulties. Tolerance, patience, and commonsense are required in guiding a child to good eating habits.

NUTRITION REVIEWS

Vol. 10, November, 1952

* Nutrition in Japan. K. Arimoto.—p. 321.
* Personality alterations in undernutrition.—p. 331.

Nutrition in Japan. A breakdown of the findings of a national nutrition survey in Japan compares the nutritional status of city dwellers with that of persons residing in the rural districts. A higher caloric consumption is found in rural areas, but the cities have a higher protein intake. Mineral and vitamin inclusion in the diet is approximately equal in both areas. The caloric intake has increased over that of 1950 in the country as a whole, and the average height and weight of the inhabitants is increasing although it does not equal the prewar standards. Physical symptoms of malnutrition have been decreasing gradually.

Personality and Undernutrition. Emotional disturbances will result from any long continued stress, and therefore, the personality changes found in war prisoners and in populations subjected to the shortages and shocks of wartime conditions may have a variety of causes in addition to the stress of malnutrition. When the degree of starvation is slight or moderate, as in some of the studies described, psychologic factors are likely to play the leading role. When food restriction is marked and prolonged, eventually all nervous structures and functions will show alterations.

PSYCHOSOMATIC MEDICINE

Vol. 14, July–August, 1952

* Relationship of specific attitudes and emotions to certain bodily diseases. W. J. Grace and D. T. Graham.—p. 243.
Effects of SKF #501 (N-9-fluorenyl N, N-ethyl-beta-chloroethylamine) on cardiovascular manifestations of hypoglycemia following administration of insulin. E. Meilman and M. D. Altschule.—p. 284.

Attitudes Related to Diseases. One hundred and twenty-eight patients with one or more of twelve symptoms or diseases were followed by means of interview. These included: urticaria, eczema, cold hands, vasomotor rhinitis and asthma, diarrhea, constipation, nausea and vomiting, duodenal ulcer, migraine, arterial hypertension, and low back pain. The interviews were aimed at determining the similarity of attitudes of patients suffering from the same symptoms. Each condition was found to be associated with a specific, conscious attitude toward the causative situation. The physiologic changes were appropriate to their corresponding attitudes. The authors propose that emotion be defined as: "an attitude with its associated physiological changes."

PUBLIC HEALTH REPORTS

Vol. 67, September, 1952

* Nutritional problems and civil defense. J. Drummond.—p. 857.
* Food supply and emergency feeding in civil defense. P. B. Murphy, L. R. Trainer, and J. M. Hundley.—p. 860.
* Necessary foods for emergency feeding. J. M. Hundley.—p. 864.
* Special feeding problems in an emergency. R. E. Butler.—p. 867.
* Feeding of mothers and children under emergency conditions. M. M. Heseltine.—p. 872.
* A coordinated investigation of a food poisoning outbreak. F. A. Korff, M. Taback, and J. H. Beard.—p. 909.

Vol. 67, October, 1952

* Role of swine diseases in diseases of man. R. E. Shope.—p. 983.
* Salmonella infections in chickens and turkeys. L. C. Heemstra.—p. 986.
* Poultry meat inspection. H. J. Stafseth.—p. 987.

Nutrition and Civil Defense. The primary problem in feeding civilian populations in emergencies is to provide daily energy requirements in the form of palatable and acceptable foods. The harmful effects of caloric deficiency on working capacity, physical condition, and morale were evident in European populations in World War II, while examples of illness caused by protein or vitamin shortage were rare. Food habits of the western world have been found to supply adequate essential nutrients in time of shortages if the caloric needs are met. In round figures, 2900 calories per person per day represent the objective. The author is not concerned with the problem of selective rationing should this goal be unobtainable, but he points out the obvious importance of palatability in the rations supplied.

Food Supply and Emergency Feeding. Emergency feeding is important not only for maintaining the nourishment of affected persons, but also for morale purposes. On the national level, the Department of Agriculture and the Federal Civil Defense Administration are responsible for food distribution, preferably through normal channels. The state civil defense food advisory committee should perfect plans for transporting necessary food and for instituting uniform voluntary controls of food sales in the entire state. Local committees should function within their areas in the same manner as the state committees. Advance planning is essential, with training provided for volunteers and attention given to sanitation.

Necessities in Emergency Feeding. Stockpiling of food for emergencies appears to be unnecessary. Should it prove imperative to have such reserves, however, information concerning the establishment and management of food stockpiles is being compiled. Recommended family food stocks, distinct from hoarding, are listed, the recommendations also forming a basis for planning warehouse stocks that may be stored as inactive supplies for emergencies. In storing, arrangements would have to be made for periodic checking and rotating to prevent spoilage and waste. Special feeding problems, such as those of pregnant or lactating women and the injured, should be met from food stocks that are stored as medical supplies.

Special Feeding Problems. Special diets for patients suffering from burns, radiation, fractures, and shock are discussed along with therapeutic diets that are needed, not as a result of the emergency, but as part of the treatment of a pathologic condition such as peptic ulcer, diabetes, or tuberculosis. Theoretically, the latter conditions, for which special diets are usually prescribed, can be temporarily controlled in times of emergency with drugs and medicines rather than by diet until a more normal flow of food supplies is reestablished.

Feeding Mothers and Children. Insofar as possible the needs for energy, protein, and thiamine of such especially vulnerable groups as children under two years of age and lactating women should be met even during short periods of emergency feeding. Recommended allowances of these nutrients are given and the essential foods supplying them are discussed. Hazards from contamination of water and milk are greatly increased under emergency conditions and suggestions are made for circumventing this

....cut food cost by serving

"NABISCO INDIVIDUALS"

PREMIUM SALTINE CRACKERS

only 1⅓¢ PER SERVING

in handy moistureproof packets

You'll be cutting food costs by reducing waste when you serve PREMIUM SALTINE CRACKERS this new modern way.

- Each package contains the right-sized portion for the average serving.
- Fresher . . . no waste caused by staleness or sogginess . . . always fresh and oven crisp.
- Less breakage...no waste in handling unused loose crackers and bottom-of-the-box pieces.
- Easier to handle...saves time and assures faster service and more appetizing appearance.

OTHER FAMOUS "NABISCO INDIVIDUALS"

FOUNTAIN TREATS
less than 1⅗¢ per serving

DANDY OYSTER CRACKERS
less than 2¢ per serving

RITZ CRACKERS
only 1¢ per serving

SEND FOR NEW FREE BOOKLET
packed with ideas on how to increase sales and cut food cost with NABISCO products including: *PREMIUM Saltine Crackers* • *FOUNTAIN TREATS* • *DANDY OYSTER CRACKERS* • *RITZ CRACKERS* • *OREO Creme Sandwich* • *TRISCUIT Wafers* ®

A PRODUCT OF

NABISCO

National Biscuit Co., Dept. 27, 449 W. 14th St., New York 14, N.Y.
Kindly send your booklet

Name.....

Organization.....

Address.....

City.....Zone.....State.....

NATIONAL BISCUIT COMPANY

contingency. The psychologic effect of emergency feeding for young children and their mothers cannot be overestimated and is therefore of great importance even though the emergency should be of short duration.

Investigating Food Poisoning. An investigation of a food poisoning outbreak following a picnic at a Maryland resort demonstrates a statistical epidemiologic procedure which should be of value in determining offending foods in the absence of laboratory analyses, often impossible to obtain. The implicated food was tracked down by analyzing data according to (a) age, sex, and presence of illness; (b) time of onset of symptoms; (c) number of attacks according to foods eaten; (d) attack rates both for specified food combinations and specified individual foods; and (e) time of onset of attack and symptoms. In this case, of the six foods eaten, potato salad was isolated as the probable cause of illness.

Diseases of Swine. The diseases of swine which can be directly transmitted to man are trichinosis, taeniasis, balantidiosis, brucellosis, salmonellosis, anthrax, and erysipeloid. The means of transmission is usually through inadequately cooked meat. Symptoms and effects of the diseases are discussed briefly.

Infections in Poultry. The hazard of Salmonella infection in poultry is frequently underestimated, although it continues to cause great economic loss. Manifest as pullorum disease, with its cycle of infection accruing from the mature carrier, it is a problem for study along with fowl typhoid and paratyphoid infection. The U. S. Bureau of Animal Industry is instrumental in promoting a program for the control of pullorum, which in turn relates to the regulation of fowl typhoid. As yet, however, the control of the paratyphoid infections presents a real challenge since their incidence in unknown.

Meat Inspection. Poultry and meat inspection might well be given the status of a new profession with definite training of three to four years on the college level. The curriculum should consist of all the regular veterinary courses with the exception of therapeutics and clinical and preveterinary work. In addition, courses in general food inspection and sanitation should be included. If the disadvantages of such a dismembering of the veterinary profession were shown to outweigh the advantages, it is suggested that veterinary colleges make an effort to stimulate interest in meat inspection since it is desirable that veterinary inspectors supervise all branches of such inspection.

SCIENCE

Vol. 116, September 19, 1952

* Propagation of a strain of *Endamoeba histolytica* in tissue-bearing culture. J. G. Shaffer and H. S. Sienkiewicz.—p. 306.

Vol. 116, October 10, 1952

* Symposium on phosphorus metabolism, Part II. P. P. Cohen. News and Notes.—p. 385.

Propagation of Amebae in Tissue. Experiments with chick embryo tissues were made to learn whether *Endamoeba histolytica* can invade host tissue by its own invasive properties, or whether certain bacteria lend assistance in the invasion of the tissues and, perhaps, contribute to the production of the characteristic lesions of amebiasis. Two methods were used, the first with blocks of tissue, the second with macerated tissue. After 48 hr. of incubation at 37°C., transplants were made of the tissue blocks and fluid and of the macerated tissue. As a result of the first method, amebae were found in the tissue blocks during five transplants but none on the sixth. No amebae were present in the surrounding fluids. Ten successful transplants were made by the second method and are being continued, indicating that amebae can be maintained in this manner indefinitely. No positive subcultures for bacteria or fungi were obtained by any method used.

Study of Phosphorus Metabolism. A complete list of the formal papers presented during the second Symposium on Phosphorus Metabolism, sponsored by the McCollum-Pratt Institute and held at Johns Hopkins University, Baltimore, in June, 1952, presents a broad coverage of the many different aspects of the subject. Phosphate assimilation was the general topic of the opening session, while the second session considered the role of phosphorus in amino acid and protein metabolism.

THE TOHOKU JOURNAL OF EXPERIMENTAL MEDICINE

Vol. 56, June 25, 1952

*Further reports on the relation between Arakawa's reaction and thiamine content of human milk. Part 1. Free thiamine of human milk, 226th report of the peroxidase reaction (173rd human milk study). T. Naito.—p. 17.

* Further report on the relation between Arakawa's reaction and thiamine content of human milk. Part 2. Bound thiamine of human milk, 227th report of the peroxidase reaction (174th human milk study). T. Naito.—p. 23.

Thiamine in human milk. As to the question of priority of identifying bound thiamine in it. A. Sato.—p. 31.

* Blood picture of nutritional dystrophy in children; effect of folic acid and vitamin B_{12} upon it (studies on the nutrition of children in Hirosaki area, 10th report). S. Wada and T. Arakawa.—p. 47.

Free Thiamine Content of Human Milk. Milk samples from seventy-two lactating mothers who had not been taking thiamine preparations were obtained for the purpose of determining the amount of free thiamine in human milk. The specimens were tested with Arakawa's reaction, slightly modified, within 3 hr., and were observed for 5 min. Milk that was positive to the reaction had far more free thiamine than milk with normal, weak, or negative reaction.

Further Report on the Thiamine in Human Milk. Human milk contains no enzyme that can split phosphate from bound thiamine. The theory attributing all biologic functions of thiamine to the effect of pyrophosphoric ester is probable. In studying the relation between Arakawa's reaction and the bound thiamine of human milk, it was found that human milk generally contains a larger amount of bound thiamine than of free. Both forms of the vitamin are usually contained in a far larger amount in Arakawa-positive milk than in Arakawa-negative milk.

Treatment of Anemia in Nutritional Dystrophy. Blood examinations were made of a group of Japanese children, who, though apparently healthy, showed signs of the pellagrous form of nutritional dystrophy. The effects of folic acid and of vitamin B_{12} upon the blood picture in these cases was also observed. Macrocytic anemia was found in 35 cases of the 46 examined in winter and in only 5 cases of the 38 examined in the summer. When 15 mg. folic acid were injected subcutaneously each day for two or three successive days, the majority of cases showed an increase in red blood cells, a reticulocyte response, a return to normal volume index, a decrease in white cells, and decreased eosinophile count, and a slight reduction in color index. The response to vitamin B_{12} was minimal. Decrease in white cell count or in eosinophile count was observed in only a minority of cases treated with the vitamin.

AMERICAN RESTAURANT MAGAZINE

Vol. 36, October, 1952

* Restaurant chefs of tomorrow.—p. 50.

* Baking luck. J. A. Cline.—p. 58.

* It's turkey day around the year.—p. 68.

* Dividends in dishwashing supervision. D. E. Anderson.—p. 76.

* Simplified portion control for 58 best sellers. G. L. Wenzel.—p. 90.

Vol. 36, November, 1952

* Faster service with assembly line planning. M. Walters.—p. 50.

Chefs of Tomorrow. Boys and girls fourteen to nineteen years of age are being taught restaurant work as a regular part of their school trade program in a Detroit high school. The restaurant training program is a three-year course consisting of two years of cooking and one year of baking, with a fourth year—pastry work—available. The course is set up in two shifts, one for beginners and one for advanced students, under the direction of a chef who learned his trade in Germany.

Leavening Agents. Here is presented a comprehensive outline of indicating composition and function of various leavening agents—air, steam, baking powders, baking soda, yeast, and certain bacteria. Greater accuracy in the use of leavening agents is recommended to facilitate success and avoid unnecessary wastes.

Increased Turkey Sales. The increased public consumption of turkeys may be due to the following factors: (a) abundance of turkeys and low cost as compared with other meats; (b) increasing popularity of turkeys; (c) better breeding programs resulting in more edible portion, cutting down preparation costs; and (d) newer ways of preparation and service.

Dishwashing Supervision. A chart which accompanies this article lists

• How much enjoyment can your geriatric patients get from life?

OF course, with the help of a good well-balanced diet, your older patients can be healthier and more active. That problem of diet is where Gerber's can be of tremendous assistance to you.

First of all, Gerber's variety is wide enough to allow for your patient's "foibles" about food — some of them built up over years and years. Yet that same variety gives you good prescription selectivity.

To help provide both the known and "unknown" nutritive factors, all of Gerber's Strained and Junior (Chopped) Foods are specially processed to retain natural food values to the maximum possible by modern methods.

Added encouragement to staying with your prescribed regimen — Gerber's "Special Diet Recipes." They offer a tempting range of easy-to-make dishes for many tastes. FREE COPIES of this booklet, with recipes based on Bland, Soft, Mechanically Soft, Liquid and Low-Residue Diets. Just write on your letterhead to Dept. 231-3, Fremont, Mich.

Gerber's BABY FOODS

4 CEREALS • 50 STRAINED & JUNIOR MEATS, VEGETABLES, FRUITS, DESSERTS

"troubles" that may cause dishwashing problems, what to check, and why to check it. Operating procedure, it is emphasized, is the weakest link in the mechanical dishwashing chain. Supervision must be thorough and the basic instructions followed. Unfortunately, the practice followed in many establishments consists in assuming that the dishwashing machine can run itself. Help which dishwashing machine manufacturers have been giving to the food service industry is discussed, as well as developments made by detergent manufacturers. A check list for mechanical dishwashing is given.

"Best Seller" Portion Control. Baked Virginia ham, short ribs of beef, pot roast, boiled beef, and roast prime ribs are the five meat items analyzed for portion control in this, the fifth of a series of articles. The basic causes of high or greatly fluctuating food costs from month to month are stated to be guesswork and lack of production and sales control.

Assembly-Line Planning. Customer volume in a Florida department-store luncheonette soon overflowed the seemingly generous space planned for it, and people were still eating breakfast when the lunch line began to form. Service was therefore streamlined in several ways: assembly-line equipment, such as a conveyor belt for used dishes, "endless" tubes of paper cups which operate almost automatically, invitations to breakfast customers to make their own toast, and automatic mixers for fountain drinks. A central switchboard unit is used for receiving orders and relaying information to the production kitchen. Waitresses are given a three-day training program, for which a manual is being assembled. On the job, they attend a menu meeting each morning. Close checking on sales records determines the need for increasing or decreasing the number of employees. Recipes, which are costed, are constantly being tested as prices fluctuate. Buying is done through a central source.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 13, November, 1952

* Tools for control. A. B. Atkinson.—p. 42

Tools for Control. The menu is the basis for all food control, the author states. A selective menu with cafeteria-type service is offered in her college food operation, and the pattern is shown. Production order forms for bakeshop, salad, and kitchen illustrate the article. These forms are the "worksheets" for the three units, and one copy is used as a "check-out" sheet. Food cost, at this time, must not exceed 47 per cent. The price of milk, salads, and vegetables is held at a minimum, while the low-cost entrées and desserts subsidize the meat items to some extent.

FOOD ENGINEERING

Vol. 24, October, 1952

* Advances flexible-film packing with frozen concentrate in bags. F. K. Lawler.—p. 74.
* When it comes to making jams, British are different. G. H. Rauch.—p. 76.
* Selecting and processing apples for top-quality pies. Part I. Getting and storing the best. L. Bisno.—p. 114.
* Simple, direct extraction of coconut oil. McGraw-Hill World News.—p. 143.
* New packages and products.—p. 158.

Frozen Concentrate in Bags. Frozen orange juice concentrate is being packed in 2½-oz. envelope bags by a Florida concern. Designed to meet the needs of a large nationwide soda-fountain chain, this method exemplifies special food-processor service to institutional buyers. Total cost of packaging is slightly higher than the conventional retail-size 6-oz. can, but the following advantages outweigh this slight extra expense: (a) no holding of squeezed juice in stirring vessels takes place, nor is there a dilution or deterioration of flavor or vitamin content; (b) the new method is sanitary; and (c) customers prefer it.

British Jam-Making Method. Governmental standards for jams and jellies in the U. S. and Britain are compared briefly. British jams contain more sugar and less fruit. British and American formulas for high-quality jams are presented in tabular form. It is difficult to draw a comparison between British home-grown and selected imported fruits and American fruit supplies and varieties, but the preservation process is sharply different. The majority of fruit in Britain is pulped and preserved with a chemical solution. Methods of use of sugar in both countries is similar, but consistency is different; most American jams would be termed "slack" in Britain. However, excellent results are being achieved by both methods, and preference for either country's jams is a matter of taste and custom.

Apples for Top-Quality Pies. Ways of obtaining and storing the best apples for pie baking are discussed, with emphasis on selection to get highest yields for lowest cost. To insure a top-quality pie apple, select a winter variety which will be a long keeper. These apples have acceptable baking qualities, are available for a long period each year, and stay firm during baking. The long keeping quality depends on the variety and area in which the apple was grown. A firm apple has better storage properties and tolerates longer baking. Larger apples save labor in cleaning and increase the yield of sliced apples if they are properly cut and cored. Labor costs, the author points out, may be controlled by: (a) storing each variety of apple in a separate lot; (b) eliminating wide variations in maturity; (c) selecting only large apples; and (d) care in discarding defective fruit.

Coconut Oil Extraction. A Filipino company has developed a new method of extracting coconut oil directly from the meat, thus eliminating the current intermediate process of making copra. The new process yields 10.21 per cent more oil with a by-product of copra meal which is expected to find use as a base for cereals. This development is expected to be useful in combating the encroachment of competing vegetable oils.

New Packages and Products. Much experimentation has gone into the development of a highly concentrated lemon juice with an aluminum tube dispenser. A 2-oz. tube contains the equivalent of the juice of twelve lemons, and any unused portion may be returned to the refrigerator . . . Powdered cream for your coffee made from fresh cream, lactose, and nonfat dry milk solids is now available. The manufacturer claims the powdered cream will not sour and may be kept several weeks at room temperature in an open can. . . A shorter shred coconut is now on the market which mixes and blends more easily and is simpler to measure. Also the customer gets 25 per cent more coconut because it packs tighter in the container.

FORECAST FOR HOME ECONOMISTS

Vol. 68, November, 1952

* Meal planning for the diabetic. E. K. Caso.—p. 16.
* Practical aids for dieters. A. Kline.—p. 17.

Meals for Diabetic Persons. Simplified calculation of diabetic diets, as compiled by the American Diabetes Association, The American Dietetic Association, and the Diabetes Branch, U. S. Public Health Service, forms the basis of this article. Exchange lists are given for milk, vegetables, fruit, bread, meat, and fats, and a sample 1500-calorie diet is presented with instructions for modifying to a 2200-calorie diet.

Aids for Dieters. Three recipes for reducing or diabetic diets are presented which use sugarless canned fruits and a noncaloric sweetener. Servings in relations to exchanges in the preceding article are noted.

HOSPITAL MANAGEMENT

Vol. 74, October, 1952

* Human relations demands teamwork, speaker and panel demonstrate.—p. 78.
* Changing trends in dietary service. E. L. Bortz and M. Behrman.—p. 110.

Human Relations. A demonstration panel was used at the September meeting of the American Hospital Association to show in an amusing way what can happen to a group which does not enjoy a healthy human relations environment. The panel was introduced by a talk which pointed out that the morale of workers is in direct proportion to the understanding of objectives by workers. In summarizing the problem of cooperation, the following points were made: (a) there must be a respect for personality; (b) all decisions must be participated in by those affected by them; (c) all decisions must be based on facts; and (d) there must be equal sharing of the benefits as well as the responsibility.

Changing Trends in Dietary Service. This article points to a more important future role for the hospital and its dietary department. There will be an emphasis on the public health role. This means that the dietitian will assume an integral part of the educational responsibility in health service. It is also emphasized that diet therapy in the future will play a dominant role

ideas

from Blickman-Built award-winning food service installations

tray production unit provides assembly-line efficiency

AT GREENWICH HOSPITAL, GREENWICH, CONN.

HONOR AWARD
Institutions Food Service Contest

TRAY PRODUCTION UNIT in main kitchen, adjacent to cooking center. Trays move on long conveyor belt between two counters. Attendants load trays from both sides according to a card control which indicates special diets or patients' preferences. Note convenient placement of steam table, coffee urns, toaster, etc. Built-in "Lowerators" dispense trays and dishes at counter level. Loaded trays are placed in insulated tray trucks for distribution to patients.

MAIN DISH PANTRY, showing dish washer at left, glass washer at right. Long shelf in foreground holds trays during unloading process. Pass window at right opens directly to tray production area. Stainless steel dish tables are fully welded throughout. Round corners and seamless, crevice-free tops facilitate cleaning, assure hospital-standard sanitation.

SALAD AND VEGETABLE PREPARATION UNIT — View shows convenient position of work tables in relation to sinks. Note how ample spacing between units permits freedom of movement for personnel. These layout factors help speed procedures. Wall-mounting of stainless steel sinks in background eliminates leg obstructions, permits thorough cleaning of floor surfaces.

• By applying assembly-line methods to the distribution of food to patients, Greenwich Hospital has achieved substantial savings in time and labor. A mechanical tray-loading unit, located in the main kitchen, is the key to an efficient central service system. Trays, moving along a conveyor belt, are loaded by attendants from both sides. All equipment is conveniently placed to speed the operation. Insulated conveyors are used to distribute the loaded trays to the various floors. Food reaches the patients on time, kitchen-fresh and palatable.

The complete food service installation at Greenwich Hospital handles the preparation and distribution of approximately 1275 meals daily to patients and employees. Efficient work flow is achieved through carefully-planned arrangement and functional design of equipment. Seamless, stainless steel construction of individual units assures a high degree of sanitation and low maintenance costs.

This installation, planned and equipped by S. Blickman, Inc., received an Honor Award in the 1952 Institutions Food Service Contest. You, too, can have food service equipment that rates high in every respect—efficiency, appearance, durability, sanitation—by specifying "Blickman-Built."

***Send for illustrated folder** describing Blickman-Built Food Service Equipment — available in single units or complete installations.*

S. Blickman, Inc., 4001 Gregory Ave., Weehawken, N. J.
New England Branch: 845 Park Square Bldg., Boston 16, Mass.

Blickman-Built
FOOD SERVICE EQUIPMENT
EST. 1889

in adding to human longevity and fuller enjoyment of living in the mature years.

HOSPITALS

Vol. 26, November, 1952

* Profitable results of employee training. Sister Miriam Eveline.—p. 107.
* Does the patient like his diet? E. B. Guernsey.—p. 110.

Employee Lecture Program. Turnover among pantry and serving girls was a major problem at St. Vincent's Hospital, New York City. Most of the workers had little education, low standards of living, and emotional instability, and the others were either older employees inclined to be scornful of newcomers, or intelligent young girls who aimed higher in the employment scale. A course of seven lectures was devised to gain the confidence of these three groups and weld them into one. After the program was completed, job titles were changed from pantry maid to food service aide. This year, again, a simplified course in "Normal Nutrition and Special Diets" is being presented. Notable improvement in *esprit de corps* has already taken place, although this is a long-range program. Moreover, the hospital has tangible proof of savings in labor, time, and money.

Patients' Acceptance of Diets. Personal contact between dietitian and patient to discuss the patient's diet should preferably take place "early in the game"—if not the day before the diet is in effect, then the day the diet begins. In this way the patient is recognized as an individual with food habits, preferences, and customs, and the dietitian is able to plan the diet for *him*, thus avoiding much food refusal. The patient is usually pleased to learn the reasons for the diet and its content. This contact also helps the patient to continue a proper diet after discharge, both through his own acceptance and understanding of his diet and by the dietitian's being able to plan it according to the patient's income, home conditions, food preferences, and the availability of the foods recommended.

HOTEL MANAGEMENT

Vol. 62, October, 1952

* Food briefs.—p. 21.

Putting zip into mild foods. A. Easton.—p. 59.

Food Briefs. Meat which has been dipped in a weak solution of either aureomycin or terramycin has been found to contain no countable bacteria at the end of twelve days' storage at 40°F. However, it is questionable as to whether it can be added to foods for human consumption. Further research is being conducted . . . Vegetable fats and oils are being used instead of butterfat or cream in the making of ice cream. This product tastes very much like ice cream but is less expensive. Caloric value of this product is similar to ice cream . . . A chemical substance has been produced with a peppery bite that is said to be more pleasant than the natural black pepper . . . A new process for treating potatoes before dehydration to prevent their turning brown during storage has been developed.

THE HOTEL MONTHLY

Vol. 60, November, 1952

* Employee relations. F. G. Guest.—p. 41.
* Personnel—interviewing, selecting and employing. J. F. Sheerin.—p. 44.
* Human relations in action. P. Valentine.—p. 48.

Employee Relations. The author points out that the purposes of employee relations are to promote a better understanding between employer and employee and to promote and maintain the economic welfare of both parties. The common interest between the employee and employer is pleasing customers, and the employee should be taught to consider this. Employee problems should be approached from the same point of view, whether an institution is unionized or not, and the author gives experienced advice to management for situations where unions are involved.

Interviewing and Hiring Personnel. Ideas are given on "where" and "how" to look for workers, and basic objectives in interviewing are presented. Factors to consider in making selection are listed: experience, physical characteristics, mental alertness, attitude, adaptability, education, age, personality, and appearance. Testing is recommended as a part of the selection process whenever possible, but the author warns that it is only a *part* of—not a substitute for interviewing. A short discussion of proper treatment after selection or rejection concludes the article.

Human Relations in Action. Industrial "isolation," or mechanization of workers, is one proof that the social order has not kept pace with the swift economic changes since the industrial revolution. One large hotel chain solved its problem with a set of "management tools" which includes: a weekly employee meeting, departmental meetings, group discussions, counselling, orientation, the hotel publication, bulletin boards, the manager's letter, and informal messages enclosed with paychecks.

INSTITUTIONS MAGAZINE

Vol. 31, November, 1952

* Job incentives hold old, attract new employees. C. H. Broaded.—p. 1.
* Latin America offers variety of food stuffs. J. W. Stokes.—p. 4.
* Serving better meals at lower cost with nonfat dry milk solids.—p. 14.
* Quality foods build drive-in volume.—p. 38.
* Teach 'em with pictures.—p. 50.
* Elegant dining, California style.—p. 96.
* How to eliminate left-overs.—p. 107.
* Develop favorable employee attitude toward sanitation. W. H. Haskell.—p. 140.

Job Incentives. Don't wait, the author warns institutions, until your best employees leave before formulating a policy which will hold them and attract new ones. In fact, no reason exists for limiting such a policy to periods of labor shortage. Greater job satisfactions can solve the twofold problem of keeping as many good, well-trained employees on the job as possible, and offering an attractive place of employment to would-be workers of good quality. Incentives suggested to keep intact and even expand the working force are: favorable personal relations with immediate supervisor and co-workers; continuity of employment; group medical and life insurance plans; an enlightened retirement policy; satisfactory union relations; adequate information to employees about the institution's economic progress; group social activities; good community relations; friendly relations with salesmen and suppliers; and attractive physical surroundings.

Tropical Food and Service. *Arroz y frijoles* (rice and beans) are the staple items of Central American diet; in fact, most natives eat a dish of rice with each meal. A great delicacy in Central America is the *iguana* (a lizard) whose flesh and eggs are much esteemed by the Indians and others. The phenomenal growth of plant life and exotic cooking of these lands make food in Central America an adventure full of contrasts. Near-primitive rural eating places, as well as luxurious cosmopolitan hotel appointments, can be found; and although few if any indigenous Central American dishes exist, the tropical foods are of interest. Central America, largely an agricultural area, exports chiefly bananas, coffee, and cacao. The processing of coffee and cacao is described. The author tells of the medical program of the United Fruit Company and describes its hospitals.

Nonfat Dry Milk Solids. Economy in labor and handling can be achieved through the use of nonfat dry milk solids in cooking, while food value and appeal remain the same. However, managers and chefs are discovering that foods prepared with nonfat dry milk solids have a further and more important economy: because this milk form has the faculty of absorbing and retaining moisture, many foods made with it are larger in volume. Formulas are given for mashed potatoes, meat loaf, cream of corn soup, white sauce, and brownie mix, all using milk solids.

Drive-In Volume. At the "world's largest" drive-in restaurant in Atlanta, Georgia, all the qualifications for a successful operation of this type are found: experience and know-how of prudent management; prominent, easy-to-reach location; good parking areas; sufficient car hops available for instant, courteous service; modern cooking and serving equipment; the best obtainable food; and moderate prices. These make possible the quick turnover which is the secret of profit for the drive-in operator. The service operation is described.

Visual Tool for Employee Training. Color slides showing correct housekeeping procedure have been prepared, together with spoken continuity to augment the pictures. The first group of slides concerns wall washing, and the discussion of this operation is presented in this article.

California Style Dining. Los Angeles' Statler Hotel offers many types of elaborate food service. Three ballrooms and

LET STANDARD BRANDS HELP YOU SAVE TIME, WORK, MONEY!

ROYAL DESSERTS—There's a wide variety of Royal Puddings and Royal Gelatin Desserts—and every one has a full, rich flavor, a smooth and uniform texture that assures mealtime satisfaction. Made of quality ingredients thoroughly tested and expertly blended. Every one nutritious . . . every one delicious!

TENDER LEAF TEA BALLS—The tea with the lively new leaf flavor . . . the naturally lively flavor that tastes so good! Tender Leaf Brand Tea is available in 1 oz. bags for making iced tea by the batch, as well as in the well-known individual tea balls.

IT'S EASY AS 1-2-3

1. *Standard Brands has had 87 years of experience in servicing hotels, restaurants and institutions*—you can rely on Standard Brands for practical cooperation in solving many of your problems!

2. *Standard Brands service is nationwide*—you can rely on prompt deliveries.

3. *There's a wide selection of top-quality products*—you can rely on them to add enjoyment and variety to every meal you serve . . . at a cost your budget can afford!

IF YOU are not already getting the benefit of Standard Brands service, call your local Standard Brands man or write to Institutional Department, Standard Brands Incorporated, 595 Madison Avenue, New York 22, N. Y.

INSTITUTIONAL DEPARTMENT

STANDARD BRANDS

INCORPORATED

Some of the famous Standard Brands Products used in thousands of institutional kitchens

eleven private dining rooms, in addition to five public dining areas, are available. The decorative scheme of two of the public dining rooms is described. Five kitchens are located throughout the hotel. Two of these are complete: one for the main dining room and the other for the main ballroom—which alone accommodates 1200 persons and can be enlarged for extra capacity. The main kitchen prepares all food for one cafe and for room service. The operations of the kitchens and dishwashing department are explained, and sixteen photographs plus two diagrams illustrate the article.

Eliminating Leftovers. Production control is the key to one industrial concern's leftover problem; no more food is produced than can be sold in any of the company's nine cafeterias at any one service period. The company operates three work shifts, and usually has two periods of service per shift—coffee break and luncheon. Management's declared policy is that the same menu, prepared fresh for each shift, must be served at the same prices in all cafeterias at all times. Production control for this operation is based on six factors: (a) a limited menu; (b) recording production; (c) comparison of sales with production; (d) review of results; (e) elimination of poor "sellers"; and (f) a continuous learning plan.

Employee Attitudes toward Sanitation. "Don't-care" attitudes among workers can ruin the results of even the best training programs—for instruction is useless for those with no desire to learn. Careless employees can not only injure expensive equipment and utensils, but may cause serious illness through practices such as: leaving refrigerator doors open; haphazard disposal of garbage; letting rodents enter through open screen doors; failing to report the presence of rodents; and allowing food and ingredient containers to remain unclean and uncovered. These conditions are not entirely management's fault; it is impossible to supervise every employee during every working minute. The "don't-care" attitude is frequently obvious to patrons. Conditions have improved since World War II, but why are employees still careless? Three reasons are given: (a) the careless attitude predominates in all walks of life; (b) reprimands may result in an employee's quitting; and (c) employees apparently no longer consider themselves as part of a business.

THE MODERN HOSPITAL

Vol. 79, November, 1952

* Food service in small hospitals—4. R. C. Lifquist and J. Hartman.—p. 116.

Food Service in Small Hospitals. Employee supervision and training are the subjects of this article, fourth in a series. The qualities of a good supervisor, on whom efficient dietary department management depends to a large extent, are analyzed. Factors affecting a labor situation include the cost of labor-saving equipment and types of foods served as related to the cost of employees' time and the availability of manpower; job requirements in relation to number of employees; and methods of selection, training, and use of employees. Each of these factors is discussed in detail. A sample job analysis is given in the section on on-the-job training, and group instruction is also covered. A lengthy bibliography is included.

PERSONNEL JOURNAL

Vol. 31, September, 1952

* Skills in conference leadership. N. Cantor.—p. 135.
* The limitations of personnel management. W. H. Knowles.—p. 138.

Vol. 31, October, 1952

* A salary grade for each point value. D. C. Childs.—p. 173.

Vol. 31, November, 1952

* How we survey attitudes periodically. A. O. England.—p. 202.

Skills in Conference Leadership. The nature of the learning process and the role of the leader in guiding it were problems considered in a workshop for training directors and personnel managers, the theme of which was the development of skills in conference leadership. Points noted are: the tendency of all individuals to defend themselves against change (negative projection); the creation of an "accepting" atmosphere by the training leader; the leader's use of his own feelings in understanding and appreciating the struggles of others; the responsibility of the members and leader; and the functions and focus of the meeting. The leader must be aware that limitations exist and learn to work within them, although he does not use that as an excuse for satisfaction with present conditions or as a defense against effort to improve.

Limitations of Personnel Management. This article states the function of personnel management thus: "[It] . . . is directly related to the objective of the business enterprise—which is to organize its operations in such a way as to make the highest possible profits." The importance of long-range thinking is stressed; short-run profit gains may lead to long-run labor strife. Personnel management can help the employee to a certain extent with his personal problems so that he may work at top efficiency. However, no personnel department can be a social work agency or public welfare program. Job security, treatment of employees as human beings, and satisfying employees' need to participate are discussed. However, limitations must exist, since to content all workers with their idea of a "fair wage," "complete security," "justice," and "work befitting the dignity of the worker" would result in bankruptcy and a collection of prima donnas. The basic limitation of personnel management lies in the product it has to sell; it cannot change the structure of society, and since it represents business interests it cannot with honesty represent workers also. Personnel management, of itself a sub-area within the field of industrial relations, can touch on, but cannot take within its scope the broad issues of public welfare work, social security, economic stabilization, and national labor policy.

Salary Grades. Jobs paying up to $5000 annually in a New York City bank were grouped into ninety-three salary grades. The system appears at first to be complicated, but two years' experience have shown the close gradations to be convenient and has revealed no difficulties or disadvantages.

Surveying Employee Attitudes. Top management men in the Air Materiel Command realize that they cannot be close enough to 150,000 workers to "keep their finger on the pulse" of employee thinking. For this reason, the Personnel Research Branch has, for the past four years, selected employees to fill out questionnaires consisting of nearly a hundred queries, which they leave unsigned. The findings of these surveys comprise the standards for measuring progress. Ways in which the surveys are analyzed and resulting corrective steps are described. Local management receives an extensive analysis of the results of the surveys, and each employee receives a pocket-size, illustrated copy of the findings, written at the seventh-grade reading level.

PRACTICAL HOME ECONOMICS

Vol. 31, November, 1952

* A traveling dietitian on an I.R.O. ship. J. Whiteman.—p. 27.
* Older folk appreciate good cooking. G. Blair.—p. 33.
* School lunch—family style. A. E. Murphy.—p. 34.

Traveling Dietitian. Displaced persons on an International Refugee Organization ship were a drastic change from hospital patients, the British dietitian-author of this article found when she became food supervisor on an Australia-bound vessel. Polyglot tongues, ages from six months to eighty years, and everything from individuals to whole families further complicated the work. The job itself was difficult enough because aboard ship all food supplies must be ordered before sailing and with regard to the limited storage space. One important aspect of the work was seeing that hygienic conditions prevailed and that all the food was wholesome; passengers had to be discouraged, as a protection against disease, from buying fruit from Eastern merchants. Complaints were inevitable; ethnic desires could not all be satisfied. Child feeding, the author's main work, became a problem principally because of parents who would become upset if the children's diets were different from those of preshipboard days and would punish the children severely for plate or bottle waste.

Cooking for Oldsters. "Not how much, but how good," is given as a fitting slogan for those who prepare foods for older people. The A.D.A. publication, *Eating is Fun—for Older People, Too!* is quoted in the author's recommendations, which include: quietness and serenity at mealtimes; smaller meals served more often; meals on time; emphasis on protein; attention to vegetables and fruits; cutting down on carbohydrates and fats; and meal planning patterns.

For QUANTITY desserts that

taste home made...

Use California Prunes in recipes like this delicious *Prune Cake Dessert*

	Serve 24	Serve 48
FOR CAKE:		
Shortening	1 cup	1 pint
Sugar	1 pint	1 quart
Eggs	4	8
California Prunes (cooked, pitted and chopped)	1½ pints (1½ lbs.)	1½ quarts (3 lbs.)
Buttermilk	⅓ cup	⅔ cup
Sifted all-purpose flour	1 quart	2 quarts
Cinnamon	4 tsps.	8 tsps.
Cloves	1 tsp.	2 tsps.
Soda	2 tsps.	4 tsps.
Salt	2 tsps.	4 tsps.
FOR TOPPING:		
Sugar	1 pint	1 quart
Flour	3 Tbsps.	⅓ cup
Butter or margarine	¼ cup	½ cup
Slightly-beaten eggs	2	4
Salt	½ tsp.	1 tsp.
Buttermilk	1 cup	1 pint
California Prunes (cooked, pitted and chopped)	1½ pints (1½ lbs.)	1½ quarts (3 lbs.)
Chopped nuts	1 cup	1 pint
SIZE PAN:	Two 13x9x2	Two 12x17x2
BAKING TIME:	35-40 min.	45-50 min.

It's a 102-year old recipe—"tested" by generations of Grandmothers and approved at generations of family tables. Now it's adapted for *quantity* baking, yet *tastes* just as home-made as ever.

To make cake: Cream together shortening and sugar until light and fluffy. Add eggs two at a time and beat well. Sift together sifted flour, spices, soda, and salt. Combine buttermilk and Prunes. Add dry ingredients to the creamed mixture alternately with buttermilk-Prunes mixture. Pour into well-greased pans. Bake in moderate (350°F.) oven.

To make topping: Mix together flour and sugar. Add remaining ingredients. Cook over low heat about 10 minutes, stirring frequently, until topping is thickened.

To serve: Spread topping over cake as soon as it comes from the oven. Sprinkle with chopped nuts. If desired, serve with whipped cream and individual pitted Prune atop each serving.

It's simple and inexpensive to spark up your quantity-service desserts with luscious California Prunes. Their wholesome *natural* sweetness turns ordinary cakes and puddings into special treats. And consider Prunes' handling advantages. Low cost. Easy storage. Simple preparation. Excellent holding qualities. Rely on California Prunes for *many* appetizing dessert possibilities.

include the California wonder fruit— **Prunes**

California Prune Marketing Program, San Francisco

School Lunch—Family Style. This pictorial article shows children at the new Memorial Elementary School in Newton, Massachusetts, where the school lunch service is unique. Children set the tables, serve fellow pupils, and act as hosts and hostesses, and teachers sell lunch tickets in the classroom so that the cook knows how many she will serve each day. A P.T.A. committee aids in planning the program and gives daily help in the kitchen.

WHAT'S NEW IN HOME ECONOMICS

Vol. 14, October, 1952

* Use school lunchroom as a laboratory. M. E. Prentice.—p. 48.

Vol. 14, November, 1952

* New poultry stuffing studies.—p. 42.

School Lunch. The school lunch offers an opportunity for a wider range of pupil activities than almost any other school program. It may be a learning experience in food selection and health habits. In some schools student groups help plan the menus, according to the Basic Seven pattern. If guided in the right way, the answer to any lunchroom problem may be found by student participation.

Poultry Stuffing Studies. Safety from dangerous organisms is stressed in recommendations based on two new studies of poultry stuffing. In summary, the recommendations are: (a) the minimum temperature to be acquired at the center of the stuffing for safety is 165°F.; (b) the thigh muscle temperature, if used as an index of "doneness," must be 200°F.; (c) stuffings may be either hot or cold if the bird is to be roasted immediately, but if the bird is to be stuffed but not roasted at once, hot stuffings should be chilled beforehand; (d) if a stuffed bird is to be held under refrigeration for a few hours, the temperature of the refrigerator should be 38°F. or below for quick chilling; and (e) stuffing should be removed from the cavity and both the leftover stuffing and poultry be refrigerated as soon as possible after serving. The best method is to stuff turkey just before roasting. Freezing of stuffed turkeys has been proved unsafe, and reheating of frozen stuffed poultry is not only dangerous but renders the birds inedible.

Low-Sodium Baking Powder

Chemistry applied to leavening agents "came alive" last year for experimental cookery students at the Illinois Institute of Technology, Chicago. Searching for a sodium-free equivalent for commercial baking powder was the class problem, suggested by the Diet Therapy Section of the Illinois Dietetic Association. It was thought that the homemaker would find it helpful in adding variety and appeal to low-sodium baked products if the necessary leavening agents could be provided by ingredients commonly available.

Study of baking powders indicated cream of tartar to be the acid ingredient most easily available to the homemaker. Potassium bicarbonate and ammonium bicarbonate seemed to be promising substitutes for the sodium bicarbonate. The theoretical yield of carbon dioxide was calculated from the chemical reactions, and the volumes (by teaspoonfuls) to produce sufficient gas for leavening a cup of flour were determined from the molecular weights. Baking powder biscuits were the testing medium.

Ammonium bicarbonate was abandoned early, because of the disagreeable "residue" flavor. Combining cream of tartar with potassium bicarbonate also proved unsuccessful, because the rapidity of carbon dioxide evolution produced poorly leavened biscuits. However, when the cream of tartar was sifted with the flour and the potassium bicarbonate was dissolved in part of the water (substituting for milk)—this latter step reserved for the end of the process—biscuits of excellent quality, except for color resulted. Browning was achieved by brushing the biscuits with egg yolk.

Applying these principles to baked goods in which egg is used, the class found that the following proportions and procedures give acceptable products:

Proportions for substitute ingredients

(a) One tsp. cream of tartar and ½ tsp. powdered or fine crystalline potassium bicarbonate should be substituted for 1½ to 2 tsp. baking powder to leaven 1 c. flour.

(b) Water should be substituted for milk in the recipe. One Tbsp. less water than milk per cup gives a batter of about the same consistency as that made with milk.

(c) Two egg yolks should replace each whole egg.

Procedures

(d) Sift cream of tartar with the flour and other dry ingredients.

(e) Dissolve potassium bicarbonate in approximately one-fourth of the water, and reserve the solution for later use.

(f) Follow general directions for combining ingredients, except that the potassium bicarbonate solution should be reserved and stirred into the mixture at the end of the mixing as rapidly as possible.

(g) Brush biscuits with mixture of one egg yolk diluted by 1 Tbsp. water.

This substitute baking powder and procedure can also be used in making quick breads, cakes, and cookies, the only additional change being that vegetable shortening or oil should be substituted for butter.

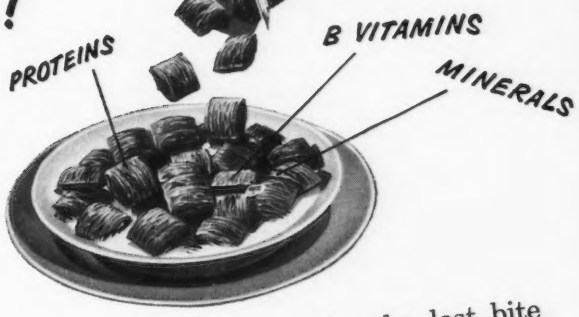
—Evalyn Brinkman, Associate Professor of Home Economics, Illinois Institute of Technology, Chicago.

Whole Wheat

IN ITS MOST DELICIOUS, CONVENIENT FORM

When the convenience offered by a ready-to-eat cereal is required to assure cooperation, so many dietitians specify

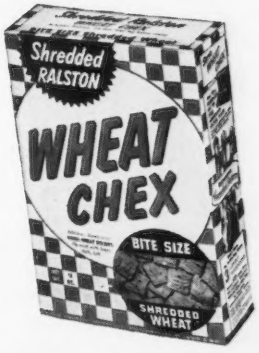
WHEAT CHEX!



WHEAT CHEX is made of whole wheat, ready to eat as it comes from the package.

It's bite size for easy eating. Specially prepared for easy digestion. Has a delicious flavor that stimulates lagging appetites. Lasting crispness in cream or milk to make the last bite as tempting as the first.

Specify **WHEAT CHEX** for breakfast—for between-meal and bedtime snacks instead of sweets.



DELICIOUS! NUTRITIOUS!
IT'S WHOLE WHEAT!

News Notes

Hawaii Calling. Those of you who live beyond the orbit of a 9-hr. flight to Hawaii may wish to take advantage of your nearness to Polynesia to spend your vacation there after the Annual Meeting next August.

If you have not explored these eight islands beyond the pictorial travel folders with their hula girls and surf riders, you have a great deal in store for you. Much that you will experience will be indefinable.

True, you will see the lush beauty of tropical, flowering Bougainvillea, poinciana, and golden shower; the blues and mauves of the valleys at twilight; and the white beaches sloping to meet the green sea. You are likely to see sunshine, mist, and the arch of a rainbow simultaneously. Shortly you will take for granted the royal palms, the silvery green of the kukui, the feather kiave, and the coconut tree, reaching obliquely toward the sky. If you loiter long enough, you will grow accustomed to the chattering of the black mynah birds, finishing the day with deafening conversation.

If you fly to the "big island," Hawaii, you will see Hilo, the second city of the Islands; then you will drive through the forest of giant tree ferns as you approach Kilauea, the volcano with its gigantic black cauldron animated with cracks and fountains of red lava.

All this and more you will see. But, if you will allow your perceptions to be sensitive, there is much that you will feel. You will sense a quality of environment which is peculiar only to the life in Polynesia. It is an indescribable blending of the physical beauty, the scents of flowers and damp earth in the morning, the tempo and the mores of the people, and the lingering flavor of old Hawaii, a land of kings and royalty, of superstition and legend.

Flights over the Pacific from Los Angeles or San Francisco are offered by United Airlines and the Pan American World Airways System. Both lines provide tours of varying lengths of time, which include trips around Oahu and may include air cruises to the other islands of Hawaii, Maui, and Kauai.

The current first class round-trip rate is $302.40 plus 15 per cent tax. The cost of tours depends, naturally, upon the length of stay, the hotel selected, and the number of persons concerned. Two people traveling together and willing to share a hotel room will realize a considerable saving.

A new tourist service has just been introduced by Pan American and may be adopted by United by summer time.

For detailed information concerning air cruises to Hawaii, write Wayne Herberger, Pan American World Airways, 300 North Michigan Avenue, Chicago 1, *or* Lester Knudson, United Airlines, 35 East Monroe Street, Chicago 3.

A.D.A. Is 10,000 Strong! Membership of The American Dietetic Association has now passed the 10,000 mark. As of December 1, the Association rolls contained 10,068 members. Charlotte Ritch of Hereford, Texas, who took her internship at The Ohio State University and will soon complete her master's degree there is the 10,000th member of the association.

Food and Nutrition Board Meeting. On November 14 and 15, the Food and Nutrition Board of the National Research Council held its semi-annual meeting at the National Academy of Sciences in Washington. Dr. Leonard A. Maynard, Chairman, announced that Dr. Fredrick Stare would assume the duties of Vice-Chairman of the Board, replacing the late Dr. Philip C. Jeans.

Progress reports were made by the various committees. Brig. Gen. W. L. Wilson reported development in Federal Civil Defense Administration programs. Ellen Ruthman, loaned from the American Red Cross, has been appointed Chief of Emergency Feeding. The pamphlet "The Construction of Improved Equipment for Large Quantity Emergency Feeding" has been prepared and is available for use in communities. It may be obtained from Civil Defense Regional Offices at no cost. Announcement was made of ten regional institutes being conducted in various areas to acquaint professional workers with the civil defense program.

Another progress report of immediate interest to members of The American Dietetic Association was that of Dr. Grace Goldsmith's committee which is reviewing the Recommended Dietary Allowances. The data on calcium metabolism were submitted by Dr. Margaret A. Ohlson, Chairman of the subcommittee. Further consideration will be made by the committee before recommendations for additional revisions are made to the Board.

Two new publications which will prove of outstanding value are now available. The monograph, *A Survey of the Literature of Dental Caries*, prepared by the Committee on Dental Health of which Dr. Philip C. Jeans was Chairman, contains approximately a hundred pages on nutrition in relation to dental health. The extensive bibliography in itself is of great worth. This monograph is available at a cost of $3 from the National Research Council, 2101 Constitution Avenue, Washington 25.

The other publication, *Therapeutic Nutrition*, prepared by the committee of which Dr. J. E. Rhoads was Chairman, although written with the needs of the Army nutrition services in mind, will be an equally valuable reference for civilian use.

Also included on the agendum were two colorful and informative talks concerning the nutrition and environment of underprivileged peoples in other parts of the world. Dr. R. R. Williams recounted his observations in traveling through South America, while Dr. William Darby, featured banquet speaker, described his clinical experiences in Yugoslavia and Egypt.

National Food and Nutrition Institute. Joint sponsors of a National Food and Nutrition Institute held in Washington, D. C., December 8 through 10, were: the U. S. Department of Agriculture, the U. S. Public Health Service, and the Interagency Committee on Nutrition Education and School Lunch. The three-day sessions were attended by approximately four hundred representatives of governmental and private agencies who have responsibilities for various phases of current food and nutrition programs.

The program which spotlighted current problems in foods and nutrition and also provided guidance for educators and other leaders in nutrition work, included the following speeches:

"Nutrition—Past and Future"—Dr. William H. Sebrell, Jr., National Institutes of Health, Bethesda, Maryland

"Food Supply and Prospects"—Dr. Frederick V. Waugh, Bureau of Agricultural Economics, U.S.D.A., Washington

"Dietary Adequacy of Family Food Supplies"—Dr. Esther F. Phipard, Bureau of Human Nutrition and Home Economics, U.S.D.A., Washington

"Food Intake of Individuals"—Dr. Pearl P. Swanson, Department of Home Economics, Iowa State College, Ames

An Assessment of Nutritional Health—a panel discussion, including

- "In the General Population"—Dr. Russell M. Wilder, National Institutes of Health
- "In Infants, Children, Adolescents"—Dr. Genevieve Stearns, Department of Pediatrics, State University of Iowa, Iowa City
- "Nutritional Problems in Later Maturity"—Dr. Edward Stieglitz, St. Elizabeth's Hospital and Consultant in Geriatrics to Veterans Administration, Washington

"Obesity, Its Prevalence, Etiology, Effects on Health, Management"—Dr. Norman Jolliffe, New York City Department of Health

"Nutritional Aspects of Chronic Disease"—Dr. Robert Anderson, Chief, Division of Chronic Disease and Tuberculosis, U. S. Public Health Service, Washington

"The Significance of Recent Advances in Nutrition Research"—Dr. Charles Glen King, Nutrition Foundation, Inc., New York City

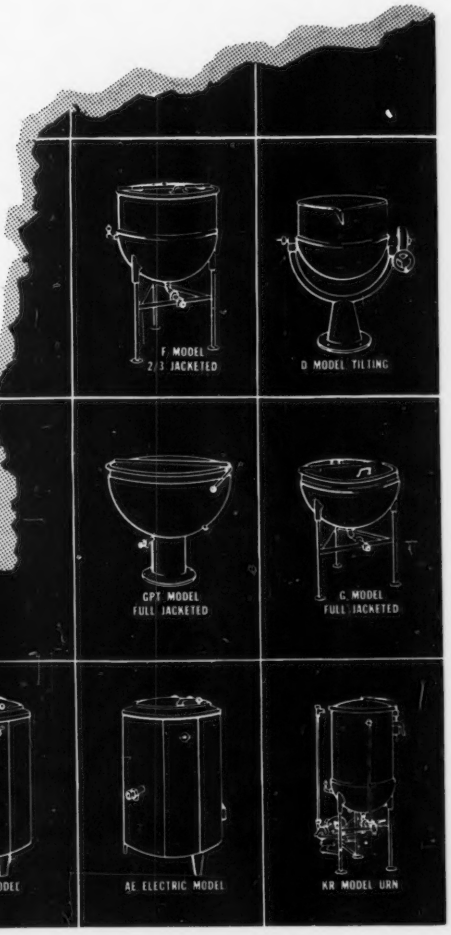
"Processing Trends and the Nutritive

Distinguished EVERYWHERE FOR FINEST COOKING

In America's leading Institutions, Hotels, Hospitals, Restaurants, etc., GROEN Stainless Steel Steam Jacketed Kettles are noted for their fine, dependable cooking. Steam jacketed cooking is ideal because it cooks ALL the food in the kettle UNIFORMLY. The entire steam jacket performs as cooking area. Heat completely surrounds the food . . . entering from all sides and bottom in equalized volume. The results: cooking is thorough, faster, always even. GROEN PT Model shown at left is extra low. Has tangent drawoff which simplifies cleaning, prevents lodgement of particles in drawoff line. COMPLIES WITH THE MOST RIGID HEALTH DEPT. REQUIREMENTS. Ask your dealer about it and other GROEN Models. Or write us. GROEN MFG. CO., 4535 W. Armitage Ave., Chicago 39, Ill. • 30 Church St., New York 7; • 7 Front St., San Francisco 11.

GROEN

Half a Century of Fine Kettles



SEE YOUR DEALER

GROEN Stainless Steel Steam Jacketed Kettles are handled by leading equipment dealers everywhere. See your dealer . . . or write us for Bulletin R-51-A.

Value of Foods"—Dr. G. E. Hilbert, Chief, Bureau of Agricultural and Industrial Chemistry, U.S.D.A.
"Nutritional Consequences of Food Laws"—Dr. Robert R. Williams, Chairman, Williams-Waterman Fund, New York City
"Limitations of Consumer Food Protection under Existing Law"—C. W. Crawford, Commissioner, Food and Drug Administration, Washington
"Some Nutritional Implications of Food Additives"—Dr. H. E. Longenecker, University of Pittsburgh
"Food Supply for Emergencies"—G. F. Geissler, Production and Marketing Administration, U.S.D.A., Washington
"A.B.C. Warfare and Food"—presented by staff members of the Health and Special Weapons Division, Federal Civil Defense Administration
"Atomic"—Vincent Lamoureaux
"Biological and General Sanitation Problems"—Fred Erickson
"Chemical"—Dr. Thomas Alphin

FDA Appoints Consumer Consultants. Sixteen women have been appointed to serve as consumer consultants to the Food and Drug Administration's District offices and provide the FDA with closer contact with the buying public. The consultants differ widely in educational background, social and civic affiliations. Some are married women with families, a few are single, but all are homemakers. Some are career women in the education and home economics fields, others are homemakers with responsibilities in women's organizations. They were chosen for their ability to know how the ordinary consumer approaches the purchase of a particular food, what she expects, what she considers important, what information on the label would be of value to her, and why she thinks it would be of value. Included in the list of sixteen consultants is Mrs. Elsie Russell, an A.D.A. member living in Los Angeles.

Goldberger Award. Dr. William Henry Sebrell, Jr., Director, National Institutes of Health, Bethesda, Maryland, on December 5 received the Joseph Goldberger Award for outstanding contributions in the field of clinical nutrition. The annual Award, including a gold medal and an honorarium of $1000, was presented by the American Medical Association through its Council on Foods and Nutrition. It is named for Dr. Joseph Goldberger, who was chiefly responsible for the discovery of the cause and treatment of pellagra, and it is made possible through grants by the Nutrition Foundation, Inc. Dr. Sebrell received the Award particularly for his discovery of the cause, symptomatology, and treatment of ariboflavinosis, another vitamin deficiency disease. He is the third recipient of the Award, the first having been made to Dr. Randolph West, College of Physicians and Surgeons, New York City, and the second to Dr. Fuller Albright, Harvard Medical School, Boston.

Plentiful Foods. The U.S.D.A. lists the following foods as expected to be in plentiful supply in January:

Fruits and vegetables	
Figs, domestic dried	Oranges
Grapefruit	Raisins
	Tangerines
Protein foods	
Eggs	Pork and pork products
Fish, frozen	Turkeys, heavy
Milk—nonfat dry solids	
Other foods	
Almonds	Salad oils
Fats, table	Shortening, vegetable
Filberts	Walnuts
Honey	
Lard	

Postgraduate Course in Diabetes and Metabolism. The first Postgraduate Course in Diabetes and Basic Metabolic Problems to be conducted by the American Diabetes Association will be offered at the University of Toronto, Canada, January 19 through 21. Director of the course will be Dr. Charles H. Best, Director, Banting and Best Department of Medical Research, University of Toronto. Over thirty lectures and round-table discussions have been planned. The course is open to nonmember physicians as well as members of the American Diabetes Association, although registration is limited to one hundred.

Tips for Supervisors. A new tack has been taken by the Research Institute

Try these **NEW**

Sucaryl Recipes

for low-calorie diets . . . *they're wonderful!*

Alice Kline and Demetria Taylor, our home economics consultants, have developed some new SUCARYL recipes that we think are out of this world. They're all so good that we decided to put out a whole new recipe booklet. In it, you'll find recipes for cookies, cake, pie, candy, ice cream, pudding and other desserts . . . salad dressing, sauces, relishes and beverages . . . home-canned fruits and jams. Calories are lower than ever, and fat content is reduced to a minimum. This just shows what you can do with a little ingenuity—and a non-caloric sweetener like SUCARYL. As you know, SUCARYL can be *cooked right in* like sugar, leaves no bitter aftertaste in ordinary use. Why not try it? It's supplied by leading pharmacies in both tablet and liquid forms: SUCARYL Sodium Tablets, in bottles of 100 and 1000; and SUCARYL Sweetening Solution, either sodium or calcium form, in 4-fluidounce bottles.

Abbott

Sucaryl®
(Cyclamate, Abbott)

Non-Caloric Sweetener for Sugar-Restricted Diets

SEND FOR FREE COPIES of new recipe booklet. Write, specifying the number of booklets you'd like, to Abbott Laboratories, North Chicago, Illinois.

A-53

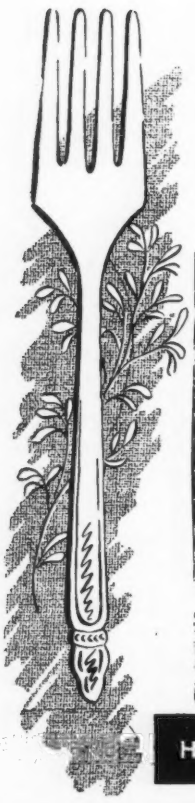
This Harvest helps solve your varied-menu problem!

This year's harvest has been the greatest in Hawaiian pineapple history! Now you can do all the taste-teasing tricks pineapple is famous for, with the added bonus of this harvest's extra fine texture and appetite-appeal! Just check DOLE Pineapple slices, chunks, tidbits and *crisp-cut* crushed for *goodness*—and be within your normal budget, too.

This year California also produced especially large and fine crops of pears, peaches, grapes and cherries. We combined them with Hawaiian pineapple in DOLE Fruit Cocktail, for welcome variations in your menus—at very favorable cost estimates, too!
Patricia Collier, DOLE Home Economist,
215 Market Street, San Francisco 6, California.

HAWAIIAN PINEAPPLE COMPANY, LTD.

P.S. *Watch your local markets, for DOLE's new Frozen-fresh Concentrated Pineapple Juice. It's due soon, if it's not already there. Try some—that really fresh taste will be something new in your experience!*



In a dessert rut?

serve different-popular

BOYSENBERRY

GELATINE DESSERT

Here's the something different in an economical dessert so many dietitians have asked for! Perky, sparkling, Boysenberry—latest addition to the famous H. B. C. quality line—so delicious it has become one of our leading sellers! Other unusual flavors include such tempting specials as *Apricot, Ginger Ale, Pineapple, Wild Cherry* and *Spiced Peach*—a total of 16 to choose from. *Perfect for salads as well as desserts!* Each 1 lb. 10 oz. can makes one gallon or 32-4 oz. servings at a cost of 1 3/4 to 2 cents per serving. Ask for our new "Unusual Gelatine Desserts and Salad Recipes" booklet—for quantity users. Be sure to order some of these new and unusual flavors today. You'll be delighted!

12/10 lb. cans..... lb. 36¢ 6 doz. 1 lb. 10 oz. cans.. doz. $7.35
Case of 6/10 lb. cans. lb. 37¢ 4 doz. 1 lb. 10 oz. cans.. doz. $7.55

Institutional Division

HILKER & BLETSCH COMPANY

Quality Food Products Since 1891

614 W. HUBBARD ST. CHICAGO 10, ILL.

Made the way you'd make them

COOK'S DELIGHT

SOUP BASES

The choice ingredients, the time tested recipes, the same care in preparation that you personally insist upon in the foods you create, are found in Cook's Delight Soup Bases. Produced under U. S. Government inspection in a modern, efficient plant, they provide you with the superior quality you like to specify. WE'LL be most happy to send samples upon request.

Williams, West & Witt's Products Co.

2596 West Ninth Avenue Gary, Indiana

of America in its new pamphlet, "How to Handle Women." In it are reported the results of a study on the problems of supervising women. Although most of the information has been presented previously in one form or another—in psychology books, personnel tomes, and other literature, even the Sunday supplements—the approach used is fresh, the illustrations are pertinent and clever, the writing style is down-to-earth, and because the information is "angled" especially for the supervisor, this publication should get wide reading in all fields—professional or industrial—where women are employed. Copies will be sent gratis to dietitians writing on their letterheads to: The Research Institute of America, Inc., 221 North La Salle Street, Chicago 1.

Work Simplification Releases. Three additional parts of the Bureau of the Budget's project of helps, collectively titled *Work Simplification Program*, have been issued to complete the series of seven. Although the series was begun in 1948, the last parts have only now been made available. The last three titles are:

Supervisor's Guide to the Work Distribution Chart
Supervisor's Guide to the Process Chart
Supervisor's Guide to the Work Count

In these leaflets, the use of the first three steps in work simplification—the work distribution chart, the process chart, and the work count—are covered individually. Effective line drawings and sample forms illustrate important points.

This series of seven publications has been designed and planned to teach supervisors the elements of work simplification and methods of using this technique to increase efficiency of operations and production. They could well be used as the basis of a training course for supervisors when a comprehensive work simplification program is to be introduced in any organization. In addition, they can function as reference guides to the supervisors after the formal training period is over. Copies of the three leaflets listed above are available from the Government Printing Office, Washington 25, for 10 cents each. See the December issue of the JOURNAL, page 1174, for a description and prices of the other four publications in the series.

Government Publications. A new part in the *Recipes for Quantity Service* series has been released by the Bureau of Human Nutrition and Home Economics, U.S.D.A., as PA-212, September, 1952 (Food Service VI). Fifteen additional recipes developed in the Bureau's institutional laboratories are given for soup, entrées, salads, and desserts. In most cases, they are for 25, 50, and 100 portions. This booklet, available to institutions, cafeterias, restaurants, and hotels, may be obtained from the Bureau of Human Nutrition and Home Economics, U. S. Department of Agriculture, Washington 25.

Dry Beans, Peas, Lentils—Modern Cookery has recently been published as U. S. Department of Agriculture Leaflet No. 326 superseding AWI-47, *Dried*

TOASTMASTER Roll and Food Warmers Speed Hot Food from Kitchen to Patient!

3- and 4-drawer models can be equipped with casters, rubber bumpers, and handle-bar for mobile use.

You can serve foods faster and at lower cost with "Toastmaster" Roll & Food Warmers. In these mobile units, individual patient's plates can be kept hot and oven-fresh for hours! Food for all floors is prepared in one location and wheeled to the various floor diet kitchens.

Serving time is shortened because patients can be served directly from the "Toastmaster" Roll & Food Warmer. Trays for each patient are filled and served "on the spot." This saves lengthy trips to the main kitchen and frees valuable help for duty elsewhere.

Stationary units without casters are also available for use as permanent food stations. Efficiency can be increased by careful placement of these "booster" food warmers.

A wide variety of foods can be kept hot and appetizing in this thermostatically controlled equipment. Rolls are kept deliciously hot . . . meats stay tender and flavorful. Vegetables, casseroles—almost everything your hospital serves will hold its fresh-cooked goodness until served.

No shrinkage, drying-out or sogginess. The "Toastmaster"* Roll & Food Warmer has an exclusive heat circulation and humidity control system. And sealed drawer construction prevents transfer of odors between drawers. A plug-in appliance —no steam or hot water connection—no installation expense.

Ask your Food Service Equipment Dealer to show you how this modern equipment can step-up food service and cut serving costs for your hospital. See him about it today.

4-DRAWER MODEL (as shown)
$445.00

TOASTMASTER
Roll and Food Warmers

Available in Sizes to Suit Every Hospital Need

4-DRAWER MODEL 4DL
(not shown) 27" square, 44" high

3-DRAWER MODEL 3DS
(not shown) 23" square, 44" high

3-DRAWER MODEL 3DL
(not shown) 27" square, 44" high

2-DRAWER MODEL 2DS
(not shown) 23" square, 22¼" high

*"Toastmaster" is a registered trademark of McGraw Electric Company, makers of "Toastmaster" Toasters, "Toastmaster" Waffle Bakers, "Toastmaster" Roll and Food Warmers, and other "Toastmaster" Products. Copr. 1953, Toastmaster Products Division, McGraw Electric Company, Elgin, Illinois.

Army Announcements Concerning Dietetic Personnel

The following dietitians have received appointments in the Women's Medical Specialist Corps Reserve and are now on active military duty:

1st Lt. Yvonne J. Carachedi, R-20202
1st Lt. Marilyn Pinsky, R-2005
1st Lt. Josephine A. Scheck, R-20204
1st Lt. Helen R. Stafford, R-2381
1st Lt. Betty Jo Sullivan, R-20057
2nd Lt. Frances J. Anthony, R-2611
2nd Lt. Lois D. Harrer, R-20205
2nd Lt. Genevieve Yelenick, R-20203

The following were selected for dietetic internships, with appointments as second lieutenants, and are serving at Brooke Army Hospital, Fort Sam Houston, Texas:

Martha L. Howe, The Pennsylvania State College
Sarah A. Martin, Alabama College

The following dietitians have been promoted:

1st Lieutenants to Temporary Captains
Dora L. Ashley, R-2169
Dorothy E. Taylor, R-820
Margaret I. L. Wakeman, R-2025

2nd Lieutenants to Temporary 1st Lieutenants
Mary M. Charlesworth, R-2542
Claire Tisdale, R-2599
Virginia R. Whitlatch, R-2601

The following dietitians have been relieved from active military duty:

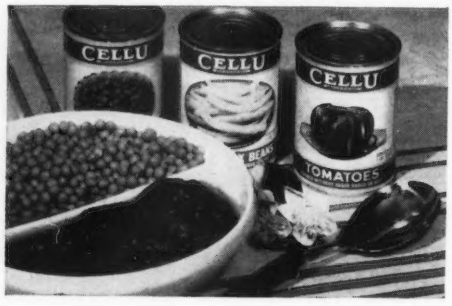
Captains
Grace M. C. Cables, R-1040
Louisa B. Harrison, R-923
Gertrude A. Holt, R-817
Delma F. Thompson, R-342
1st Lieutenants
Gloria S. E. Beck, R-2600
Dorothy L. Boland, R-2589
Gwendolyn E. Dupree, R-2598
Doris Fredrickson, R-2578
Belle Young Grohs, R-2377
Mary K. McDonnell, R-2557
Ermenia L. Nasci, R-2584
Patricia A. Parker, R-2593
Charlotte R. Scripture, R-1079
Ann E. Shea, R-570
Carol M. Stevenson, R-2112

The following dietitians have been honorably discharged:

Capt. Marie A. Stevenson, R-10124
Capt. Mary A. Tope, R-10126
1st Lt. Rosemary O. Brown, R-10101

1st Lt. Margaret H. Kolze, R-2546, has been recalled to active military duty.

FOR THE
LOW
SALT
DIET



Cellu Canned Vegetables and Vegetable Purees. Packed Without Sugar, Salt or Other Seasoning.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

18 Popular Vegetables and Purees Available

For cardiac patients, and others on sodium-restricted and salt-restricted diets. Cellu Canned Vegetables and Cellu Purees are packed without any added seasoning—condiments are easily added if conditions permit. Use Cellu Canned Vegetables and Purees to add variety to restricted diets . . . Corn, Asparagus Tips, Peas, Stringless Beans, Pureed String Beans, Carrots, and Peas, and ten other favorites to choose from. Food values printed on the label for convenience in planning diet meals.

Send for FREE CATALOG of Cellu Dietary Foods

CELLU PURPOSEFULLY PREPARED *Dietary Foods*
CHICAGO DIETETIC SUPPLY HOUSE Inc.
1750 West Van Buren Street Chicago 12, Illinois

CELLU
K-SALT
(Sodium-Free)
Adds an appetizing salty tang to foods without adding to sodium intake. In handy shaker top container.

Beans and Peas in Wartime Meals. Prepared by Mary T. Swickard of the Bureau of Human Nutrition and Home Economics, this leaflet contains recipes using legumes in main dishes, soups, salads, sauces, and bean purées. The new shorter method of soaking is presented, and tips on seasonings and ways to cut down foam are given. A table is included summarizing methods for boiling or using a pressure cooker. The booklet is available from the Government Printing Office, Washington 25, for 10 cents a copy.

Importance of Nutrition to Good Health, prepared by the U. S. Public Health Service, is Health Information Series No. 31 and Public Health Service Publication No. 162. Discussed in the leaflet are: important nutrients; the vitamins—their functions and food sources; and calories. The price is 5 cents a copy from the Government Printing Office.

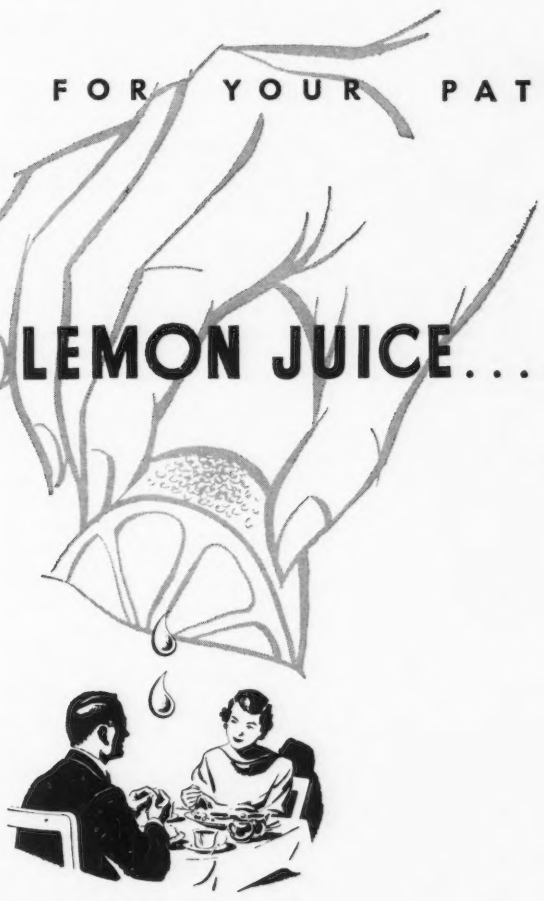
The Office of Education, Federal Security Agency, has summarized *State Provisions for School Lunch Programs: Laws and Personnel* as Bulletin 1952 No. 4. Prepared by Myrtis Keels Jeffers, Division of State and Local School Systems, the bulletin gives a short history of school lunch programs and a discussion of school lunch administrative problems. Two chapters deal respectively with authorization for the establishment of state school lunch programs and organization of the programs. Appendices include excerpts from state school lunch laws, and three selected state laws are reprinted in full. This report may be obtained from the Government Printing Office for 20 cents.

World Medical Association. The first western hemisphere conference of the World Medical Association will be held in Richmond, Virginia, April 23 through 25. Meeting jointly with the World Medical Association at the conference will be the Pan American Medical Confederation. Leaders of national medical societies, along with speakers representing the nineteen recognized medical specialties and the field of general practice, are expected.

Food Handling Schools in South Dakota. Fifteen food handling schools for hospital personnel were conducted during 1952 by the South Dakota Dietetic Association and the South Dakota Department of Health. The Association accepted the request to participate as a project for the year and appointed a committee to work with the Department of Health. All hospitals in the state were invited to send their food service personnel to one or another of the schools. The state was divided into four areas with a dietitian placed in charge of each who was responsible for local arrangements. T. A. Evans, Chief, Milk and Food Section of the Department of Health, served as the instructor for the schools. Subjects covered included: bacteriology; communicable disease; protection of food from contamination; dishwashing; and personal hygiene. The representative of the dietetic association presented material on proper diet. Visual aids, flip charts, demonstrations, and dis-

GOOD NEWS FOR YOUR PATIENTS

Fresh LEMON JUICE.....



TO INCREASE PALATABILITY
OF LOW SODIUM DIETS

In all too many instances, holding the patient to the low sodium or sodium-free diet presents a real difficulty. The change in taste from liberally salted dishes to foods prepared without salt frequently proves unacceptable.

Here is good news for many of your patients. A wide range of such foods becomes acceptable when the juice of fresh lemons is used for seasoning at the table. Lemon juice enhances the natural flavor of many foods, lends a new taste appeal to them, brings to otherwise drab and insipid dishes a new gustatory appeal.

Fresh lemon juice, because it is virtually sodium free, is particularly suitable as a seasoning agent in the dietary management of hypertension, cardiac disease, especially when associated with congestive heart failure, and nephritis, and for patients receiving ACTH or cortisone. In weight-reducing diets, when salt restriction is advisable, fresh lemon juice will serve well to make the restricted diet more attractive to the palate.

Suggest that a dish of lemon wedges be placed on the table with every meal whenever you have to impose a sodium-low diet.

Sunkist Growers
Los Angeles 54 • California

Sunkist® *Lemons*

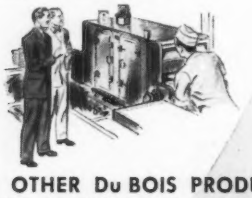
Du BOIS
K·O·L
Supreme

for excellence in machine dishwashing

K-O-L gives you *clean* glassware, *bright* silver, *sparkling white* dishes because it lets them rinse and dry without bacteria-breeding film and water droplets. And, because a dirty dishwashing machine can't possibly do a good job, it keeps the machine clean . . . Knocks-Out-Lime.

For perfect results, in any dishwashing machine, see Du Bois' ELECTRONIC CONTROL. With laboratory precision, it maintains exact solution strength, assuring cleaner tableware with greatest economy.

Combined with a better product Du Bois' superior service assures trouble-free dishwashing operation which easily meets the most rigid health department requirements. Glassware, silver and dishes not only are strictly sanitary, they look inviting, sparkling clean.



OTHER Du BOIS PRODUCTS FOR ENGINEERED SANITATION

- **D-LITE** . . . for no-film hand dishwashing.
- **S-U-D-S** . . . Super Sudser for pots and pans.
- **ACTEX** . . . For kitchen floors and refuse cans.
- **TEMP** . . . For tile, porcelain and metal.
- **NEUTRALAVE** . . . Safe, fast cleaner for fine composition floors.
- **NEUTRA-GLOSS** . . . Heavy-duty, s'id-resistant floor wax.

WRITE FOR FULL DATA on any Du Bois Product, or for expert help on any sanitation problem. No obligation.

The Du Bois Company
CINCINNATI 3, OHIO • LOS ANGELES, CAL.

cussions were used. Ten schools were held during April; out of the sixty-nine hospitals invited, forty-two were represented as well as four homes for the aged and one crippled children's hospital. The total attendance was 335, with 210 of these receiving certificates of attendance and copies of the pamphlet "From Hand to Mouth." Five additional schools were held in October.

Dietary Refresher Conferences. Five dietary "refresher" conferences have been held in Indiana during the past two years, sponsored by the Indiana Board of Health and state and local dietetic and other associations. The last one, sponsored by the Board of Health and the Indiana Department of Public Welfare, was held in Indianapolis on October 29. A food demonstration and discussion were given by Theresa Samuels, Morgan Health Center, Indianapolis. Marian C. Jones, Institution Nutrition Consultant, Indiana Board of Health, led a discussion on "Planning for the Dietary Needs of Children," and Kenneth Chapman, Health Education Consultant, Indiana Board of Health, was the leader for a session titled "Developing Happy Meal Times." Other A.D.A. members who have participated in the sessions include: Joyce Myers, Indiana State Board of Health; Bernes L. Folkner, consultant dietitian; Fernetta Lusher, Bartholomew County Hospital, Columbus; Corinne Catlin, Welborn Memorial Baptist Hospital, Evansville; Ada E. Showalter, Elkhart General Hospital, Elkhart; and Grace E. Jackson, St. Joseph Hospital, South Bend.

Army Interns Graduate. On October 10, eleven second lieutenants in the Women's Medical Specialist Corps of the Army completed their dietetic internships at *Walter Reed Army Hospital, Washington, D. C.* They are:

Dorothy A. Amendt, R-2607
Helen Benson, R-2631
Elizabeth Hall, R-2620
Florence L. Jakeway, R-2626
Betty A. Kearns, R-2625
Alice Larkin, R-2629
Mary A. Owen, R-2621
Janice E. Piper, R-2610
Betty J. Sandblom, R-2612
Jeanne Sherburne, R-2615
Margaret E. Shipman, R-2616

Eleanor Gerst Wilson. Word of the death of Eleanor Gerst Wilson on November 23 in St. Paul has been received with especial sadness, for Mrs. Wilson this past year served as Co-Chairman of the Local Arrangements Convention Committee for our 35th Annual Meeting in Minneapolis. She had been a member of the Association since 1936 and an active participant in the affairs of the Minnesota Dietetic Association. Prior to becoming a full-time homemaker, Mrs. Wilson had been Assistant Chief Dietitian of the Veterans Administration Hospital, Minneapolis. She is survived by her husband, Dr. Russell Wilson, and an infant daughter.

Lorena Richardson Barfoot. Notification has been received in the A.D.A. office of the recent death of Lorena Richardson Barfoot in Edmonton, Canada. Mrs. Barfoot, an A.D.A. member since 1932 and a life member since 1933, had received many honors in both American and Canadian dietetics. She was the first president of the Canadian Dietetic Association and last year was named honorary president. In 1922, Mrs. Barfoot became head of the research department of Childs' Restaurants, New York City, setting up standards among its fifty-eight establishments. She later joined the staff of Simpson's restaurants in Canada and, as manager of Acadian Court, Simpson's well-known formal dining room, introduced a new catering system.

Ruth Wilkinson John. The A.D.A. office has been notified of the death of Ruth Wilkinson John in Norristown, Pennsylvania, on October 27. Mrs. John, who at the time of her death was Assistant Dietitian at the Norristown State Hospital, had been a member of the Association since 1927. She was a native of Philadelphia.

Patricia Leonard. Word has been received in the A.D.A. office of the death of Patricia Leonard in Sauk Centre, Minnesota, on October 24. Miss Leonard became an A.D.A. member in 1945 and had been on the staff of the State Hospital in Fergus Falls, Minnesota.

Perishability of Frozen Meats. Spoilage actually may be slower in meat that has been frozen than in fresh meat, according to William Sulzbacher, Bureau of Animal Industry, U.S.D.A. His statement "debunks" the widespread theory that meat is more perishable after freezing. Tests were made with ground pork and beef loin to which were added bacteria which commonly cause spoilage and food poisoning. Samples were kept frozen from two weeks to a month, then thawed and held in a refrigerator for five days. Bacterial growth started at once in the fresh meat, but not in the frozen meat until 48 hr. had elapsed after thawing, thus indicating that freezing may cause a lag in the growth of spoilage bacteria. Results might have been different, Mr. Sulzbacher stated, if the meat had been frozen for a longer time. However, his tests suggest that frozen meat is no more perishable in the refrigerator than "fresh" unfrozen meat, and that if a good refrigerator is used, the cook need not rush to use meat for fear of spoilage the moment it has been thawed.

News of State Associations

Alabama Dietetic Association. Officers for 1952-53 of the Alabama Dietetic Association are: President, Elma Benton, VA Hospital, Birmingham; President-Elect, Dr. Bessie L. Davey, University of Alabama, Tuscaloosa; Secretary, Mary Ida Flowers, Alabama College, Montevallo; and Treasurer, Janyce Ward, Jefferson Hillman Hospital, Birmingham.

INSIDE SCIENCE

The Vital Story of RICE ENRICHMENT

by Science Writer

The story of rice enrichment begins in the Philippines in 1910. In that year and place, Dr. R. R. Williams encountered the clue that started him on the road to the first successful synthesis of thiamine (vitamin B_1) in 1936. It was the curative effect against beriberi of an extract of rice polishings.

The problem of beriberi, while not serious in the United States, is recognized as severe, with high mortality, in the Philippines and other Asiatic countries where the population exists principally on white rice.

It is known that beriberi is caused by dietary deficiency and that factors in those parts of the rice which are removed in the milling are effective in combating the disease.

If rice could be milled to the whiteness desired by rice eaters and, at the same time, be made to contain the anti-beriberi factor, a giant stride could be taken to improve the health of rice-eaters. The use of white rice by these peoples, coupled with illness and death from beriberi, poses a problem for public health officials.

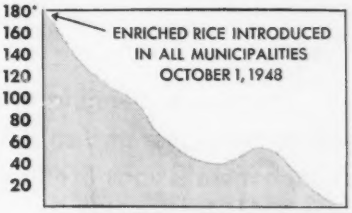
The answer to this problem was found in the laboratories of Hoffmann-La Roche. The researchers discovered a process by which white rice could be fortified. The method employs coatings of thiamine, niacin, and iron on rice grains and a final, outer coating of edible material to protect the vitamins against deterioration and preliminary washing and rinsing. For economy, large amounts of vitamins are applied to small amounts of rice to make a "premix." One pound of this enrichment premix is then mixed with each 199 lbs. of ordinary milled white rice at the rice mill. Each 8 ounces of this nutritionally-improved rice provide 1 mg. of thiamine, 8 mg. of niacin and 6.5 mg. of iron. These levels are commonly used but higher levels are easily obtainable.

A research project was established to study the effect on health of feeding white rice so enriched to a *population* in the Far East. Through the cooperation of the Government of the Philippines, the U. S. Public Health Service, the Williams-Waterman Fund, the Philippine National Rice and Corn Corporation, and Hoffmann-La Roche, a controlled experiment on the Bataan peninsula was set up. Medical examinations, under the direction of Dr. Juan Salcedo, now Secretary of Health for the Philippine Republic, were made of more than 12,000 people in the area before the enrichment of rice began. Nearly 13% had beriberi but most were symptom free a year later.

Enriched white rice was put into commerce in the experimental area, after full publicity about the program, on October 1, 1948. Careful monthly records were kept of the mortality from beriberi in the experimental and control areas.

The results of the test proved overwhelmingly the value of enriched white rice.

At the end of 2 years, with over 90,000 persons under this great nutritional test, the beriberi mortality rate per 100,000 population had dropped from approximately 190 in the experimental area to zero! And, from the evidence of the medical examinations, it was found that almost 90% of those who had displayed beriberi symptoms earlier were now free of them or greatly improved. Literally thousands of people were helped to better health.



The vital story of the Bataan experiment shows once again the value of enrichment to *entire peoples*. The moral is obvious: when good foods are made better, everyone benefits.

Published in the interests of better health through better nutrition by the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. Reprints of this article are available on request, without charge.

Arkansas Dietetic Association. The Arkansas Dietetic Association, together with the Arkansas League for Nursing and the Arkansas Board of Health, co-sponsored a two-day work conference on "Diet Kitchen Experience and Clinical Instruction in Schools of Nursing" at the VA Hospital in Little Rock, December 4 and 5. Virginia Toews, University of Kansas Medical Center, served as leader and consultant for the conference sessions and addressed the group on the subject of "Integrated Diet Therapy Teaching in a Nursing School."

California Dietetic Association. Los Angeles was the scene of the California Dietetic Association's fall meeting, November 28 and 29. Sam Dietz of Dietz and Company Ltd., San Francisco, discussed "Portion Ready Meats," and William Simmons, Herrick Memorial Hospital, Berkeley, spoke on the "Group Therapy Approach to Weight Control." Dr. Zolton T. Wirtschafer's topic was the psychosomatic and cultural aspects of obesity.

The *Bay Area*, California Dietetic Association, met in October at the Southern Pacific Hospital, San Francisco. Patricia Albright, a dietetic intern at the University of California, was announced as the winner of the California Dietetic Association Scholarship Award. Genevieve Callahan and Lou Richardson, co-editors of the *California Cookbook*, were guest speakers. They discussed their writings and their apartment-test kitchen in San Francisco, and told of the workshops in writing they have conducted. Officers of this association for 1952–53 are: Chairman, Virginia McMasters, University of California Campus Cafeteria, Berkeley; Vice-Chairman, Sylvia Roletto Mitchell, Herrick Memorial Hospital, Berkeley; and Secretary-Treasurer, Dorothy Johnson, St. Luke's Hospital, San Francisco.

Illinois Dietetic Association. The *Chicago Dietetic Association* on November 19 heard Dr. Martin Seifert, Medical Advisory Committee for the National Foundation of Infantile Paralysis of Cook County, discuss "Dietary Regimen for the Treatment of Poliomyelitis Patients."

Indiana Dietetic Association. The *Northeastern Indiana Dietetic Association* was hostess for the fall meeting of the Indiana Dietetic Association in Fort Wayne on November 7. Dr. Margaret A. Ohlson, immediate Past-President, A.D.A., spoke on "Experiences at the International Dietetic Congress in Holland This Summer."

Newly elected officers of the Indiana Association are: President, Rose Neidhoefer Bagnoli, VA Hospital, Indianapolis; President-Elect, Hazel Wessel, Methodist Hospital, Indianapolis; Secretary, Marian C. Jones, Indiana Board of Health, Indianapolis; and Treasurer, Helen Skinner, St. Joseph's College, Collegeville.

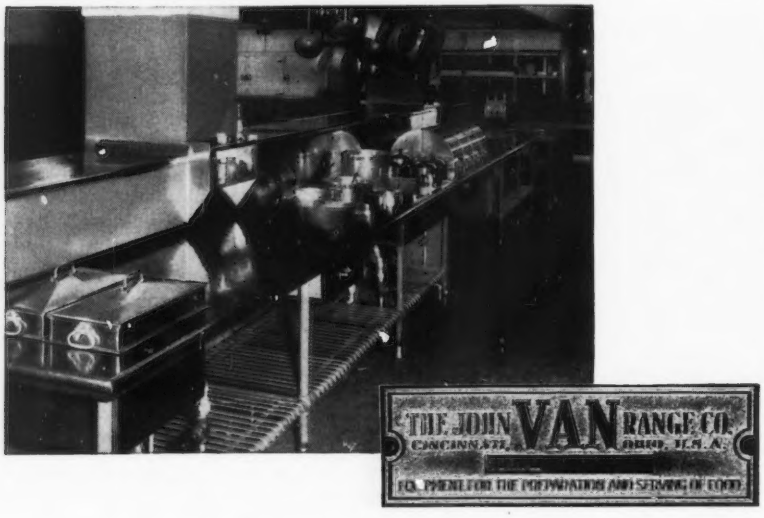
Iowa Dietetic Association. New officers of the Iowa Dietetic Association are: President, Mildred Torrance, Mercy Hospital, Des Moines; President-Elect, Darleen Pullins, St. Joseph Hospital, Ottumwa; Secretary, Irma Piegors Johnson, University Hospitals, Iowa City; and Treasurer, Shirley Needham Wilkins, Children's Hospital, Iowa City.

Kentucky Dietetic Association. Officers for 1952–53 of the Kentucky Dietetic Association are: President, Margaret Leonard Hall, City Hospital, Bowling Green; President-Elect, Florence A. Imlay, University of Kentucky Experiment Station, Lexington; Secretary, Norma Paige Iglehart, Hartford; and Treasurer, Elizabeth Taylor Banes, Louisville.

The *Bluegrass Dietetic Association* announces the following officers for 1952–53: President, Winnie Ruth Bryant, VA Hospital, Lexington; Vice-President, Margaret E. Graham, U. S. Public Health Service Hospital, Lexington; and Secretary-Treasurer, Dr. Adelia Emily Weis, University of Kentucky, Lexington.

The recently formed *Western Kentucky Dietetic Council*, composed of both professional and nonprofessional dietitians working in the area, has as its moderator Margaret Leonard Hall, President, Kentucky Dietetic Association. The group meets every third month at the same time as the Western Kentucky Hospital Council.

Louisiana Dietetic Association. The *Shreveport Branch* of the Louisiana Dietetic Association held its November meeting at the VA Hospital. The follow-



at outstanding kitchens you look for Van's mark

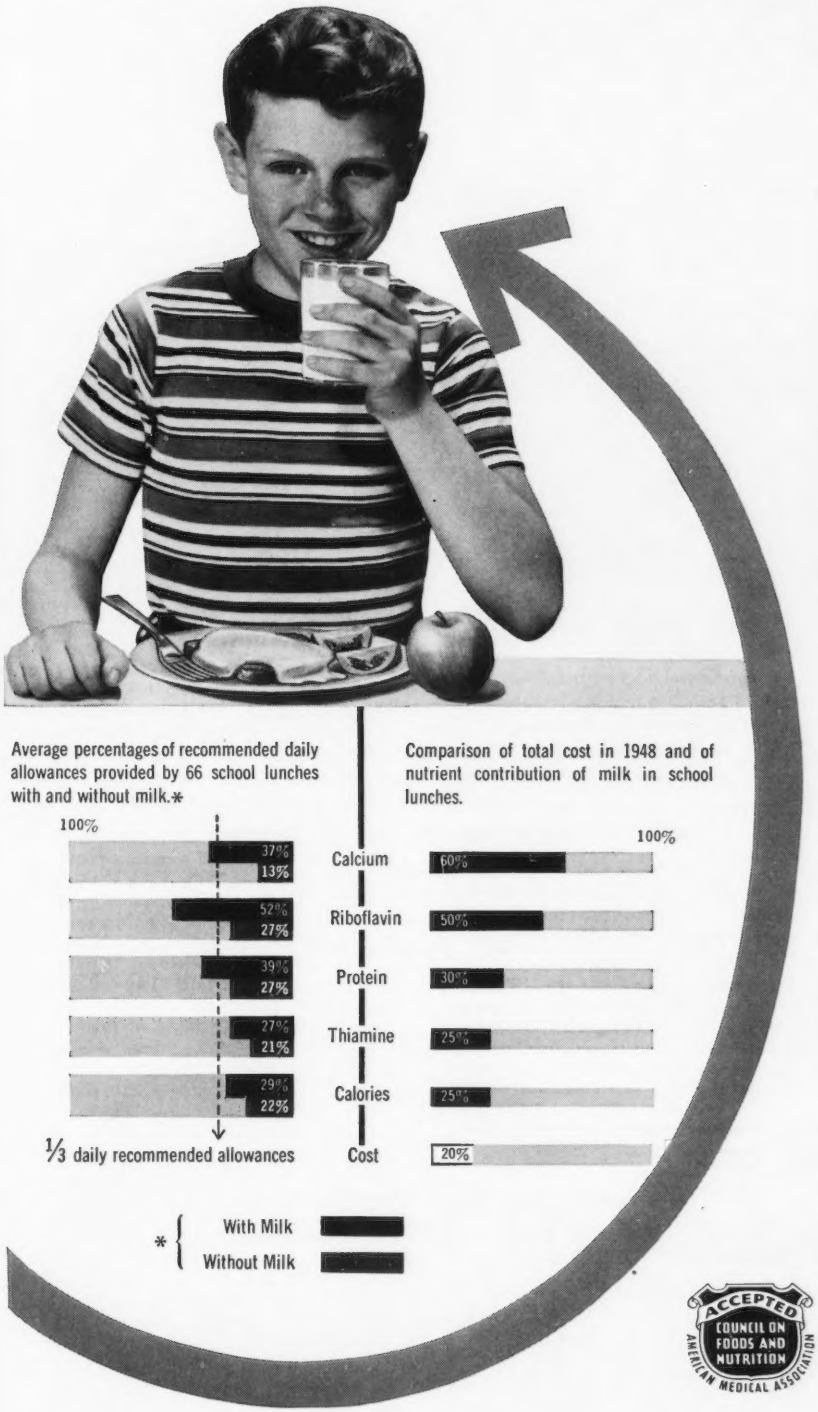
● When you see an unusually fine food service installation, you will undoubtedly find Van's name plate on the equipment. It is like the name Sterling on the silver you cherish.

If you are planning food service equipment improvements, make use of Van's skill and experience. Illustrations of such installations are in Van's Centennial Book of Installations. Write for it.

The John Van Range Co.
EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD
DIVISION OF THE EDWARDS MANUFACTURING CO.
341 Eggleston Ave. Cincinnati 2, Ohio

MILK in the SCHOOL LUNCH,

for economy
for health



Milk tops the list of foods recommended for school lunches—because of its high nutritional value in relation to cost. Other dairy foods—cheese, butter, ice cream . . . are often part of the school lunch . . . contributing extra milk nutrients . . . adding variety to the meals.

In a study of 39 schools in 1948, the cost of one-half pint of milk averaged only one-fifth of the total cost of food and labor for type "A" school lunches.[1] That same amount of milk contributes a far greater portion of the nutritive value of this type of lunch with respect to at least five nutrients.[2]

Analyses of 66 school lunches showed that, on the average, milk contributed more than one-half the calcium, about one-half the riboflavin, a little less than one-third the protein, and about one-fourth the calories and thiamine present in the meals. Lunches containing milk supplied, on the average, more than one-third of the day's recommended allowances of protein, calcium, and riboflavin, and almost one-third of the recommended amounts of calories and thiamine. This standard was seldom met for any of these nutrients in lunches without milk.[2]

There is no substitute for milk in the school lunch when nutritive value, cost, and ease of preparation are considered.

[1]Driesbach, M. B. and Handy, E. School lunch management in relation to nutritive value, cost and acceptance of foods served. U.S.D.A. Pa 114 (Jan.) 1951

[2]Meyer, F. L., Brown, M. L., and Hathaway, M. L. Nutritive value of school lunches as determined by chemical analyses. J. Am. Diet. Assn. 27:841 (Oct.) 1951

This seal indicates that all nutrition statements in the advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

NATIONAL DAIRY COUNCIL

111 NORTH CANAL STREET • CHICAGO 6, ILLINOIS

Since 1915 . . . the National Dairy Council, a non-profit organization, has been devoted to nutrition research and education to extend the use of dairy products.

It's the SPICES you use...

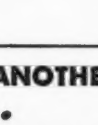
that give FLAVOR to your cooking

All Spice
Bay Leaves
Carraway Seed
Celery Salt
Celery Seed
Chili Powder
Chili Seasoning
Chillies, Japan
Chillies, Mexican
Cinnamon, Pure—Saigon
Cinnamon, Stick
Cloves
Cream of Tartar
Cumin Seed
Curry Powder
Garlic, Salt—Seasoning
Garlic, Powder
Ginger
Marjoram
Mixed Spices
MSG—
(Pure Sodium Glutamate)
Mustard
Nutmeg
Onion Salt—Seasoning
Oregano
PAPRIKA, GEN. IMPTD.
PEPPER, PURE BLACK
Pepper, Imitation Black
Pepper, Cayenne—Red
Pepper, Pure White
Pepper, Imitation White
Poppy Seed
Poultry Seasoning
Pumpkin Pie Spice
Rosemary Leaves
Sage, Dalmatian
Sesame Seed
Thyme Leaves
Turmeric

Flavor is what your customers *want* and flavor is what they *get* . . . when you use Continental's pure, full strength spices in your cooking.

Milled fresh and packed at once to retain their natural oils, Continental Spices and Seasonings are rich and pungent in their aromatic fragrance, and uniformly full strength to add zest and relish to your prized dishes.

Thousands of restaurants get better results with Continental's spices, *plus* convenience and low cost. So see *your* Continental Man . . . today!



CONSTANCE CONOVER SAYS—"Variety is the spice of life; and variety in menus puts 'spice' in the cash register!" Get a free assortment of latest recipes developed by Constance Conover, head of our Quantity Recipes Dept. Ask your Continental Man!

ANOTHER OF...

Continental's "76"

"FLAVOR-TESTED" MENU PRODUCTS

TEA • HOT CHOCOLATE MIX • CHOCOLATE SYRUP AND FUDGE EXTRACTS • MUSTARDS • SAUCES • SPICES • SOUP MIXES • PANCAKE MIX • PANCAKE SYRUP • GELATIN DESSERTS • CREAM DESSERTS • PURE EGG NOODLES • MACARONI • SPAGHETTI • MAYONNAISE • SALAD DRESSING • FRENCH DRESSING • THOUSAND ISLAND DRESSING

CONTINENTAL COFFEE COMPANY

CHICAGO • TOLEDO • BROOKLYN

Producers of Continental Coffee, America's Leading Coffee for Restaurants, Hotels, and Institutions

©1952, Continental Coffee Co.

ing officers have been elected: President, Catherine F. Walters, Caddo Parish School Lunch Room Board; Vice-President, Frances Osborn Hazzard, VA Center; and Secretary-Treasurer, Lucille Townsend Page, VA Center.

New Jersey Dietetic Association. Alex Balinky, Economics Lecturer at Rutgers College, addressed the twentieth anniversary meeting of the New Jersey Dietetic Association in Princeton on November 5. His talk was centered on the basic reasons for conflict between the U. S. and the Soviet Union. A tableau titled "Our Family Album" was presented by the state officers, depicting the important contributions of the Association during the year.

New officers of the New Jersey Association are: President, Mary M. Griffin, Board of Education, Newark; President-Elect, Reizel Hirschfield, VA Hospital, East Orange; Corresponding Secretary, Elizabeth Lippincott, Highland Park High School, Highland Park; Secretary, Viola Maciorkoski, Lutheran Memorial Hospital, Newark; and Treasurer, Anita Brown, Orange Memorial Hospital, Orange.

New York State Dietetic Association. The *Greater New York Dietetic Association's* activities during the past year have included the planning, with the United Hospital Fund and the Greater New York Hospital Association, of a two-day institute for hospital dietitians. Subjects covered on the program were purchasing, interdepartmental relationships, and organization for the service of therapeutic diets. As a Community Nutrition activity, eight exhibits were shown in libraries in English and Spanish, and the Food Administration Section's plan for the fall was a cooperative education plan for New York City high school seniors in home economics to work in dietary departments. The Professional Education Section sponsored three activities: a talk to mothers on "Dietetics as a Profession"; a talk to one hundred high school girls; and a career day at Adelphi College. Training of food aide volunteers has been a public relations project of this association.

In 1951–52 members of the *Hudson Valley Dietetic Association* have: conducted two radio interviews on recruitment; given food planning guidance in children's homes; worked with recipes for low-salt and diabetic diets; and made personal contact with high school vocational guidance directors.

Three projects have highlighted the year for the *Mid-Hudson Dietetic Association:* a radio program with the Chemical Society; cooperation with the County Health Association in weight reduction and a cardiac clinic; and a career day for fifty students, which included a showing of A.D.A. slides and a hospital tour.

Rochester Dietetic Association projects during 1951–52 have been marked by variety. Members held a one-day hospital dietary institute for personnel of rural hospitals. This institute covered purchasing, cost control, and good nutrition in hospital feeding, and included a

PREFERRED for CREAM SERVICE

Hall creamers are pure white inside and can be kept that way permanently with a minimum of cleaning and sterilizing. Made of heavy, fireproof china by an exclusive process, they are crazeproof, absorption-proof, and stainproof. Reasonable first cost and extreme durability make them the most economical creamers you can buy.

Write on company letterhead for Catalog 48, which lists almost 1,000 different Hall China items and contains a color chart of the 26 beautiful underglaze colors that are available.

THE HALL CHINA COMPANY • EAST LIVERPOOL, OHIO

The World's Largest Manufacturer of Fireproof Cooking China

Shaping Hall China Cream Bottle

Hall Creamers are made in sizes ranging from individual to banquet service. Sugars are also available.

HALL
Secret Process
FIREPROOF CHINA

NEW
flavor lift for LOW-SODIUM DIETS

Adolph's SALT SUBSTITUTE

Low sodium foods can now have all the tang of salt seasoning. Adolph's, only product containing MONO POTASSIUM GLUTAMATE, flavors—tastes—sprinkles like salt.

MAKES ALL MEAT MORE TENDER

Regardless of cut or grade, Adolph's guarantees tenderness, less shrinkage—cooking time, and improves flavor. Reduce meat budget by changing cooking methods of less expensive cuts.

Adolph's MEAT TENDERIZER

For FREE SAMPLES write: Dept. DA
ADOLPH'S FOOD PRODUCTS, L.A. 46, Calif.

NEW...the DIET BOOK of the YEAR

The first complete handbook for 7 major classes of restricted diets. Written with a lively concern for diet success. Over 1,200 new delicious recipes . . . 50 indispensable picture charts and other valuable aids.

1. **WEIGHT-REDUCING**—Hundreds of interesting low-calorie dishes. Calorie count printed above each recipe.
2. **LOW SODIUM**—A wealth of key recipes. Sodium count printed above each recipe.
3. **DIABETES**—Recipes and menus presented in cooperation with American Diabetes Ass'n. All recipes detailed (carbohydrates, etc.) . . . food exchanges shown.
4. **HIGH RESIDUE**—Dishes to help curb the laxative habit; correct atonic constipation.
5. **LOW FAT, LOW CHOLESTEROL**—Appetizing recipes for the arteriosclerotic patient.
6. **BLAND**—For ulcer and colitis patients.
7. **WEIGHT-GAINING**—High calorie recipes to coax extra weight and energy.

THE SPECIAL DIET COOK BOOK

By MARVIN SMALL

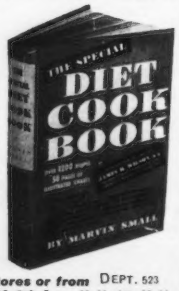
Introduction by James R. Wilson, M.D.
Secretary, Council on Foods and Nutrition American Medical Association

512 Pages
OVER 1,200 RECIPES
50 Illustrated CHARTS

$2.95

A lifetime reference book. A "gold mine" of diet data.

Simplifies diet menu planning. Insures diet success.



At bookstores or from DEPT. 523
GREYSTONE PRESS, 100-6th Ave., N. Y. 13, N. Y.

panel discussion of adaptation of the regular menu for special diets. Members also worked with the planning committee for North Park Hospital's kitchen. In addition to these general activities, the Community Nutrition Section presented a "Fun with Food" day for Girl Scouts; the Diet Therapy Section held bimonthly meetings with the "Oldsters Club" on food for the aged; and the Professional Education activities included talks to high school groups and a display titled "Dietetics in Rochester" shown at the public library.

The members of the *Syracuse Dietetic Association* made four television appearances during the year. Community Nutrition Section members conducted a five-session "Nutrition Carnival" with the Home Bureau, and the Professional Education Section held a career day for high school girls. The Diet Therapy Section, in conjunction with the Hospital Council, published a diet manual.

The Professional Education Section of the *Utica Dietetic Association* personally contacted thirty-two high schools. Their program included a talk, tea, and tour of a hospital dietary department.

South Dakota Dietetic Association. Rapid City was the scene of the South Dakota Dietetic Association's recent third annual meeting. The Association will continue the project of co-sponsoring with the State Department of Health a series of food handler schools for hospital personnel (see page 80).

Officers for 1952-53 of the South Dakota Dietetic Association are: President, Sister M. Dorothy Schroeder, St. John's McNamara Hospital, Rapid City; President-Elect, Dr. Lida M. Burrill, South Dakota State College, Brookings; and Secretary-Treasurer, LeOtia Glaus, Black Hills General Hospital, Rapid City.

Texas Dietetic Association. The *Dallas Dietetic Association* on February 9 will hear Dorothy Sinz, Dallas *Times Herald*, discuss "Food through the Eyes of a Newspaper Editor."

Virginia Dietetic Association. A purchasing institute, planned by the Food Administration Section of the Virginia Dietetic Association, was held in Richmond on December 5. Catherine Nawn, U. S. Department of Agriculture, Washington, D. C., discussed "Quantity Buying in Meats and Meat Grading," including in her talk a demonstration and slides. Three other marketing experts from the U.S.D.A. presented lectures and demonstrations on eggs, poultry, processed and frozen foods, and fresh fruits and vegetables.

Washington State Dietetic Association. The Washington State Dietetic Association's annual fall conference was held in Seattle, November 7 and 8. Kenneth Monfore, Chief, Seattle District, Federal Food and Drug Administration, discussed "Protective Provisions of the Federal Food, Drug, and Cosmetic Act." Dr. Howard Hackendorn addressed therapeutic dietitians on "Some Aspects of Carbohydrate Metabolism." A session on "Newer Findings in Nutrition Research" was presented by physicians on the VA Hospital staff. Mildred Bonnell, University of Washington, Seattle, reported on the First International Congress of Dietetics held in Amsterdam last July, and also told of contacts with dietitians in Europe. Jennie Rowntree, also of the University of Washington, concluded the conference with a talk on "Professional Ethics."

Wisconsin Dietetic Association. The *Madison Dietetic Association* entertained University of Wisconsin students in institution management and hospital dietetics in November at the new VA Hospital. The program centered around the dietetic internship. Melsean Hauck discussed her experience in a private hospital; Gloria Jorgensen's topic was the Army internship; and Betty Guyer spoke on her internship in a VA Hospital.

Association Activities

New A.D.A. Committees. Several new committees have been formed by the President this year to help carry on and study the work of the Association. They are:

Committee on International Relations among Dietitians. The activity of this committee, chaired by Dr. Margaret A. Ohlson, will be directed toward fostering international relations among dietitians. Assistance will be given in the exchange programs of foreign students and dietitians.

Professional Position of the Dietitian. This committee will study the professional position of the dietitian in relation to training and performance on the job. E. Evelyn Smith will serve as Chairman.

Auxiliary Worker. Lottie Crecelius is Chairman of the A.D.A. Committee to Study the Auxiliary Worker.

Membership Requirements Committee. This committee, under the chairmanship of Esther A. Atkinson, will study our present membership requirements in the light of the present and future needs and challenges of our profession. Several meetings of the committee were held during the Annual Meeting and again in Chicago on November 29.

Four New Career Posters. Four attractive, two-color posters for bulletin board use (10 by 13 in.) are now available from the A.D.A. headquarters office at a nominal price of 4 for 5 cents. The set may be comprised of one of each type of poster or four of a single kind. These posters feature photographs of four major fields of activity—hospital dietetics, administrative dietetics, public health nutrition, and business and the dietetic internship. This material is suitable for use in junior and senior high schools, and colleges; for display in career days in schools and hospitals; and for use in booths at state fairs, libraries, and meetings of youth and adult groups.

SO SIMPLE . . .

even a "first-time father" can prepare it with ease

Though "boiling water" is the extent of his culinary skill, the newest of fathers can, with Similac Liquid, readily prepare a formula closely approximating human breast milk in nutritional quality and digestibility.

AS SIMPLE AS THIS . . . One part Similac Liquid added to one part sterilized water provides the standard 20 cal./fl. oz. feeding formula.

SO SIMILAR TO HUMAN BREAST MILK: *there is no closer equivalent to the milk of healthy, well-nourished mothers in prepared liquid form than*

SIMILAC *Liquid*

Provides: fat, protein and carbohydrate closely approximating the content of mother's milk in quantity and quality; 50 mg. of ascorbic acid per reliquefied quart; vitamin B_{12} and folic acid (naturally occurring, in breast milk quantities); other vitamins in adequate amounts; zero curd tension for easy and quick digestion.

Supplied: *Tins containing 13 fl. oz. Also available: SIMILAC Powder, tins containing 1 lb.*

A QUARTER CENTURY OF PROGRESS IN INFANT NUTRITION — M&R NUTRITION RESEARCH SERVICE

M & R Laboratories • Columbus 16, Ohio

New Appointments, Veterans Administration

The following hospital appointments of dietitians, not previously announced, have been made by the Veterans Administration.

Name	Position	Location
	Boston Area	
Doris Mae Asmus	Staff Dietitian	Northport, N. Y.
Verla C. Barbour	Staff Dietitian	Framingham, Mass.
Joan A. Brickman (Reappt.)	Staff Dietitian	Montrose, N. Y.
Jean Bryde	Staff Dietitian	Northport, N. Y.
Theresa Ann Calligaro	Staff Dietitian	Buffalo, N. Y.
Barbara E. Cooney	Staff Dietitian	Rutland Heights, Mass.
Julia Vail Farr	Staff Dietitian	Castle Point, N. Y.
Blanche Lee Glenchur	Staff Dietitian	White River Junction, Vt.
Evelyn A. Glysson	Staff Dietitian	Bath, N. Y.
May Matsuko Imori	Staff Dietitian	Brooklyn, N. Y.
Theresa Patricia Mikitish	Staff Dietitian	Northport, N. Y.
Audrey Florence Naley	Staff Dietitian	Brooklyn, N. Y.
Gertrude Anne Stanko	Staff Dietitian	Northport, N. Y.
Lucy S. Taylor	Staff Dietitian	Canandaigua, N. Y.
Serafina J. Traficanti	Staff Dietitian	Newington, Conn.
Jean M. Zerfas	Staff Dietitian	Framingham, Mass.
	Washington, D. C. Area	
Wilma L. Alderfer	Staff Dietitian	Indianapolis, Ind.
Dorothy R. Chilcoat	Staff Dietitian	Altoona, Pa.
Mary H. Coles	Staff Dietitian	Roanoke, Va.
Dolores Dattilo	Staff Dietitian	Louisville, Ky.
Phyllis K. Deaver	Staff Dietitian	Perry Point, Md.
Patricia M. Fahey	Staff Dietitian	Martinsburg, W. Va.
Marilyn Farrand	Staff Dietitian	Cleveland, Ohio
Irene Figner	Staff Dietitian	Butler, Pa.
Catherine O. Fiorillo	Head Dietitian	Martinsburg, W. Va.
Ruth D. Friel (Reappt.)	Staff Dietitian	Aspinwall, Pa.
Betty Sue Keffer	Staff Dietitian	Martinsburg, W. Va.
M. June Kettering	Staff Dietitian	Lebanon, Pa.
Mary Joyce McCrocklin	Staff Dietitian	Dayton, Ohio
Helen E. McIntosh	Staff Dietitian	Kecoughtan, Va.
Ruth D. McShane	Staff Dietitian	Perry Point, Md.
Madeline Alma Miller	Staff Dietitian	Martinsburg, W. Va.
Marjean Nabors	Staff Dietitian	Richmond, Va.
Martha Loree Negley	Staff Dietitian	Altoona, Pa.
Leonore I. Newmann	Staff Dietitian	Dayton, Ohio
Betty Olson	Staff Dietitian	Richmond, Va.
Betty Cummings Reed	Staff Dietitian	Lyons, N. J.
Alice J. Remnant	Staff Dietitian	Dayton, Ohio
Helen M. Rohman	Staff Dietitian	Louisville, Ky.
Mary Ann Seager	Staff Dietitian	Cleveland, Ohio
Betty J. Wilhelm	Staff Dietitian	Lebanon, Pa.
Agnes R. Yates	Staff Dietitian	Lexington, Ky.
	Atlanta Area	
Betty Ann Broyles	Staff Dietitian	Nashville, Tenn.
Gloria A. Fulghum	Staff Dietitian	Memphis, Tenn. (Crump)
Cathryn W. Hamrick	Staff Dietitian	Augusta, Ga. (Annex)
Gertrude A. Holt (Ret. fr. Mil.)	Chief Dietitian	Montgomery, Ala.
Edith M. Kendrick	Staff Dietitian	Lake City, Fla.
Jean Hoyt LeVan	Staff Dietitian	Memphis, Tenn. (Kennedy)
Pearl H. Llewellyn	Asst. Chief Dietitian	Augusta, Ga. (Annex)
Frances W. Millsip	Staff Dietitian	Memphis, Tenn. (Crump)
Eileen Frances Ritter	Staff Dietitian	Memphis, Tenn. (Kennedy)
Marjorie Ann Scott	Staff Dietitian	Mountain Home, Tenn.
Gwendolyn J. Sybeson	Staff Dietitian	Memphis, Tenn. (Kennedy)
Helen Veal	Head Dietitian	Oteen, N. C.
Hellen F. Watkins	Staff Dietitian	Jackson, Miss.
Eleanor E. Woodruff	Staff Dietitian	Jackson, Miss.
	St. Louis Area	
Mary Collins	Staff Dietitian	Temple, Tex.
Walterine B. Durham	Staff Dietitian	Alexandria, La.
Dorine Hansen	Staff Dietitian	Houston, Tex.
Joyce V. Henderson	Staff Dietitian	N. Little Rock, Ark.
Betty Jean Henry	Staff Dietitian	Houston, Tex.
Adelyne M. Holgert	Head Dietitian	Big Spring, Tex.
Jacqueline J. Jones	Staff Dietitian	Fayetteville, Ark.
Esther Lillie Martin	Staff Dietitian	Kansas City, Mo.
Helen Orbeck	Staff Dietitian	Temple, Tex.
Eileen M. Tetley	Staff Dietitian	Poplar Bluff, Mo.
Lenora G. Weber (Reappt.)	Asst. Chief Dietitian	Big Spring, Tex.
	San Francisco Area	
Merle Moreen Beech	Staff Dietitian	Long Beach, Calif.
Eloise M. Case	Staff Dietitian	Livermore, Calif.
Fern Clancy	Staff Dietitian	Boise, Idaho
Barbara Jean Glock	Staff Dietitian	Long Beach, Calif.
Kathleen C. Hatch	Staff Dietitian	Livermore, Calif.
Geraldine Marriott	Staff Dietitian	Long Beach, Calif.
Alva Nelson Perry	Staff Dietitian	Whipple, Ariz.
Julia B. Richards	Staff Dietitian	Boise, Idaho
H. Virginia Tizard (Reappt.)	Staff Dietitian	Los Angeles, Calif.
Kathryn M. Tondreau (Reappt.)	Staff Dietitian	Los Angeles, Calif.

(*continued on page 92*)

Latest A.D.A. Publication. A new career leaflet replacing *Dietitians Today* will be off the presses the latter part of this month. *Facts for You on Dietetics* will include the types of information most frequently requested by those interested in the field of dietetics and is suitable for high school students and adults. Prices will be:

Single copy	$0.03
Lots of 50	1.25
Lots of 100	2.00

A.D.A. Representatives. A national *Food and Nutrition Institute*, co-sponsored by three government agencies, was held in Washington, D. C., December 8 to 10, 1952 (see page 74). Many A.D.A. members were present, with Dorothy Bovee attending as our official representative.

Dr. Lillian Coover, A.D.A. representative on the Civil Defense National Advisory Committee for Women's Participation, and Chairman of the A.D.A. Civil Defense Committee, attended the *Federal Civil Defense Administration Meeting of Region V* in Chicago on November 20 and 21.

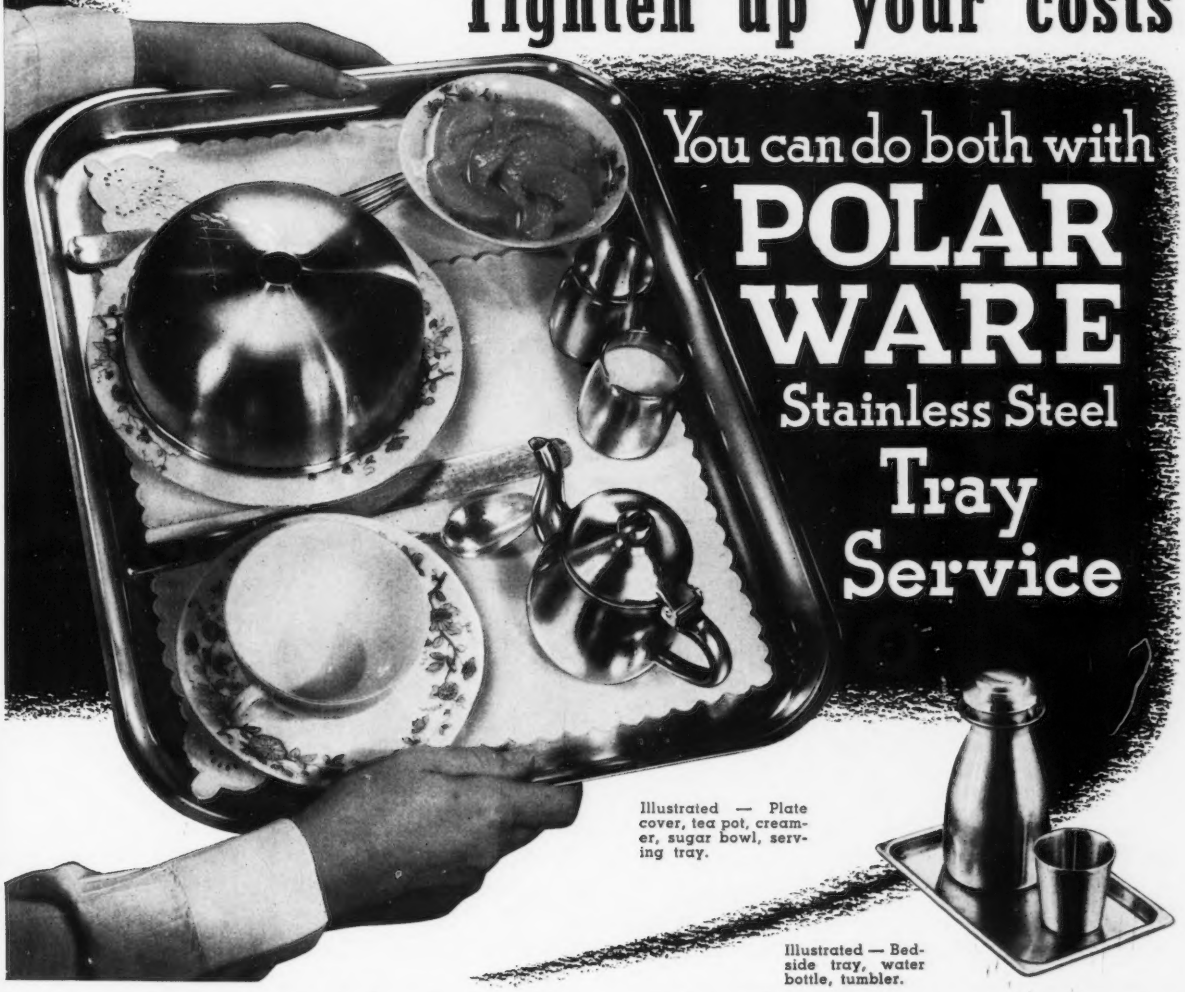
Grace Bulman will attend, as the A.D.A. representative, the meeting of the *American Council on Education* to be held in Washington, D. C., January 30 and 31.

News of Advertisers and Exhibitors

American Can Company has recently announced the inauguration of a college scholarship program with a twofold purpose; (a) contributing financial assistance to private colleges and universities and (b) helping sons and daughters of employees to continue their education. Each scholarship, entitling the winner to full tuition at any properly accredited college or university listed in the 1951–52 education directory of the U. S. Office of Education, will be good for a maximum of four years provided the student maintains satisfactory standards. Sons and daughters of those employees who have completed at least five years of service are eligible for the scholarships; also, employees under twenty-three years of age with one year of service are eligible. In addition to the tuition, the company will make a supplementary contribution of $500 a year toward an institution's general educational budget for each student enrolled under the program.

General Foods Corporation has announced that Instant Sanka Coffee is now available in individual server envelopes which form their own "built-in" pouring spouts. The new wrinkle has been developed to make the work of waitress or counterman easier, and to reduce irritation of the customer in cafeterias. They are available to institutional users in boxes of thirty-six, six cartons to a case. The contents of one envelope suffices for one cup of Sanka, while two envelopes contain enough for a 10- or 12-oz. pot.

Brighten up your patient's tray
Tighten up your costs



Illustrated — Plate cover, tea pot, creamer, sugar bowl, serving tray.

Illustrated — Bedside tray, water bottle, tumbler.

It's no longer a question of whether or not to serve toast with a cover, or coffee and tea in individual pots. Almost everyone does it . . . and for many good reasons. Today the question is which material among a number of alternatives is actually best for tray service—and best from the standpoint of final cost to the hospital? From these two points of view consider stainless steel Polar Ware.

Point of View No. 1. The effect of Polar Ware psychologically on recuperating patients is almost therapeutic, for food does appear more appetizing, has more appeal when the tray service is bright, cheerful, spic and span stainless steel. And only stainless steel can keep that shining "like-new" look through indefinite years of service.

Point of View No. 2. The impact of Polar Ware stainless steel tray service on your costs-of-doing-business is also all to the good. Made from durable, rugged Allegheny metal, Polar Ware tray service will still be in daily service long after alternate materials have been replaced time and again.

There is nothing better and nothing cheaper in overall cost than this time-tried and time-tested modern tray service, already used by hundreds of hospitals everywhere. You'll find, too, that Polar Ware is carried by leading hospital supply houses from coast to coast. Ask the men who call on you for all of the facts, or, if you prefer, write

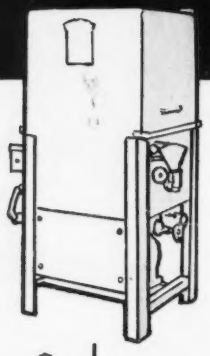
Polar Ware Co. 4100 LAKE SHORE ROAD · SHEBOYGAN, WISCONSIN

Veterans Administration Appointments, Continued

Fort Snelling, Minnesota Area		
Celia Louise Brain	Staff Dietitian	Lincoln, Neb.
Joan R. Brill	Staff Dietitian	Hines, Ill.
Kathryn C. Fenelon	Staff Dietitian	Hines, Ill.
Emily L. Forester	Staff Dietitian	Wood, Wis.
Helen I. Frauenhoffer (Reappt.)	Head Dietitian	Downey, Ill.
Mary Ellen Jaeger	Staff Dietitian	Wood, Wis.
Alice J. Jenkins	Staff Dietitian	Wood, Wis.
Gloria E. Jorgenson	Staff Dietitian	Madison, Wis.
Betty Jane Krueger	Staff Dietitian	Wood, Wis.
Bernice Levine	Staff Dietitian	Hines, Ill.
Mary L. Lindow	Staff Dietitian	Wood, Wis.
Miriam Lough	Staff Dietitian	Hines, Ill.
Lina A. McCann	Staff Dietitian	Hines, Ill.
Marian Ory Marsh	Staff Dietitian	Hines, Ill.
Doris K. Rave	Head Dietitian	Grand Island, Neb.
Rosemary C. Sanders	Staff Dietitian	Saginaw, Mich.
Barbara E. Stavros	Staff Dietitian	Omaha, Neb.
Edna S. Strand	Staff Dietitian	Wood, Wis.
Ethel E. Strandquist	Staff Dietitian	Iowa City, Iowa
Betty Jo Wyatt	Staff Dietitian	Hines, Ill.

Universal gives you:

Improved Design | Advanced Performance | Greater Value

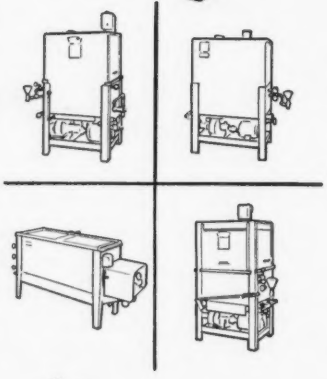


Because only Universal gives you all these EXTRA improvements.

For 180° Rinse — Your choice of improved electric, gas or steam operated rinse water boosters built right into Universal Dishwashing Machines. Meet Health Authority requirements. Require no extra plumbing. Save installation cost.

For Time Control of Dishwashing Cycle— An improved hydraulic operated timed wash and rinse control unit for the complete wash, dwell and rinse cycle. The simplest and most dependable timer made.

For 50% Better Dishwashing — Universal "Swing-Wash" and Universal revolving wash feature motion in the wash cycle. "Swing-Wash" moves the dishrack back and forth under power wash. Revolving Wash features a constantly changing water pattern. Increases coverage of wash sprays. Available on certain models.



31 MODELS TO CHOOSE FROM—The most complete line — a model for every need — competitively priced — highest quality and workmanship — greatest dishwasher value.

Write for Complete Catalog — TODAY!

World's Largest Exclusive Producer of Commercial Type Dish, Glass and Silver Washing Machines

Universal DISHWASHING MACHINERY CO.

COMMERCIAL TYPE UNIVERSAL DISHWASHERS

30 WINDSOR PLACE, NUTLEY 10, NEW JERSEY

"All About Apples" is the title of a new booklet recently released by the *Processed Apples Institute Inc.* This attractive thirty-three-page booklet contains general information about apples, plus recipes for appetizers, main dishes, vegetable dishes, relishes, fancy breads, cakes, pies, other desserts, and beverages, all using processed apple products, i.e., apple juice, slices, and sauce.

A new combination of Garland commercial cooking equipment which will provide extra baking and roasting capacity has recently been introduced by *Detroit-Michigan Stove Company.* The 186-line Garland restaurant range has been combined with the 2-29 Garland heavy duty baking and roasting oven, resulting in a unit which provides three separate baking and roasting ovens, each with separate temperature controls. The restaurant range features six burners which are available in open top, hot top, or fry top, or any combination of the three.

Edward Don & Company has purchased the Boutelle Restaurant and Hotel Equipment Co. of Minneapolis, so that it may enlarge and expand the present facilities in that area. The new facilities will be operated as a branch to bring better service to the Minneapolis-St. Paul and surrounding area.

Procter & Gamble's Restaurant Research Department has available five booklets containing recipes and cooking hints from their Research Kitchens. They are titled: "Deep Fried Seafoods," "The Production of Sweetex Tasty Rich Yeast Raised Doughnuts," "Presenting More of the Crusty, Delicious Deep-Fried Turnovers and Dumplings," "Fit for a King! Your Customer!" and "Deep Frying Pointers." Either Sweetex shortening or Primex, for frying and shortening, is used in all the recipes.

Klenzade Products, Inc. has made available in reprint form an editorial titled "Modern Sanitation Methods" which originally appeared in the 1952 Institutions Catalog Directory. In addition to discussing sanitation in general, the editorial gives specific directions for: machine dishwashing; glass washing; pot and pan washing; cleaning large equipment; cleaning deep-fat fryers; hand dishwashing; and cleaning coffee brewing equipment. Many illustrations accompany the article, in addition to a bacteria control chart, a food storage temperature chart, and a chart of temperature and chemical activities. The definitions and functions of commonly used detergents conclude the booklet.

Two new commercial aluminum frying pans have been introduced by the *Harlow C. Stahl Co.*, one an 8-in. size, the other, a 10-in. size. Handles are of malleable steel. Other features include: rounded corners for easy cleaning, extra thickness at rim and corner for lengthened wear, and added bottom thickness for even distribution of heat.

Amcoin Corporation is opening an office in New York City with a factory-trained staff for sales and service. This office will be equipped for demonstrations and tests of the company's various types of all-glass interior units for hot and cold acid-containing beverages.